Engin. Library
JUN 2 1926

PAPER TRADE JOURNAL

Vol. LXXXII, No. 21 MAY 27, 1926 Per annum, $4.00 Per copy, 10 cents

SULPHITE AND KRAFT PULP

UDDEHOLM
STORA
UTANSJO
WIFSTAWARF
LION BRAND
THURBO

SALES AGENTS U. S. A.

Scandinavian Pulp Agency, Inc.
342 Madison Avenue
New York

THE Book, Writing and Lithograph papers made by The Northwest Paper Company have the *texture, finish, opacity,* and attractive *brightness of color* which command them to a wide variety of uses. Samples on request.

THE NORTHWEST PAPER COMPANY

Mills and General Office: Cloquet, Minnesota

Chicago Office: Room 909-537 So. Dearborn Street, Chicago, Illinois

Manufacturers of standard printing papers of unusual quality

KLO-KAY ENGLISH FINISH BOOK · KLO-KAY WHITE WRITING

KLO-KAY ENGLISH FINISH LABEL · KLO-KAY OFFSET

A Hytor operates *without vibration*

No. 6 Nash Hytor Vacuum Pump, in connection with suction rolls, King Mill Division, Allied Paper Mills, Kalamazoo, Mich.

THE only moving parts in a Nash Hytor Vacuum Pump are the impeller, and the shaft on which the impeller is mounted.

The impeller revolves freely, without touching the casing. The shaft is supported by non-wearing ball bearings. Result—the original precise alignment of the shaft is held unchanged. Operation is silent, smooth, and vibrationless.

This and the many other advantages of Nash Pumps for removing condensation and air from flat boxes, screens, suction rolls, felts, dryers and similar equipment are fully described in our bulletins. Copies free on request.

NASH ENGINEERING COMPANY

So. Norwalk Connecticut

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

Western Representative
Mr. T. H. Sawers, Jr., 1524 Republic Bldg., Chicago, Illinois.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

Entered as second class matter August 13, 1925, at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. ESTABLISHED 1872 FIFTY-FOURTH YEAR EXECUTIVE AND EDITORIAL OFFICES: 10 EAST 39th STREET, NEW YORK CITY. Published every Thursday by the Lockwood Trade Journal Co., at 24 N. Crystal St., E. Stroudsburg, Pa. CHICAGO: 123 West Madison St., Chicago, Ill.

ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. LXXXII, No. 21 — PAPER — Thursday, May 27, 1926

The Magazine of the Paper Industry

Ontario Paper Co. Begins New Development

Following Completion of Power Project on the Outarde River by Organization Controlled by Chicago Tribune, Mill With Minimum Daily Capacity of 100 Tons of Pulp Is To Be Erected—Manicouagan To Become Model City—Further International Expansion —Submit Plans for Tidal Water Development in Passamaquoddy Bay

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 24, 1926.—The Ontario Paper Company has started work on the development of 40,000 h.p. on the Outarde River, on the north shore of the St. Lawrence, below Quebec. The Company, which is controlled by the *Chicago Tribune*, leased from the Provincial Government in January, 1923, two thousand square miles of timber limits on the north shore along the Manicouagan River, about 100 miles east of the Saguenay River. At the same time, the Outarde Falls, on the river of the same name, were leased to the company on condition that developments would be started within three years. Since that time the company has made a thorough inventory of its Manicouagan limits, also delimiting its property. This survey has been handed over to the Hon. Honore Mercier, minister of lands and forests, who left a day or two ago to visit the property and become personally acquainted with the work being carried out by the company.

Some 300 men will be engaged on the power development, and as soon as this is completed, a mill with a minimum daily capacity of 100 tons of pulp will be started. The contract calls for the completion of this mill by 1930, but it is planned to construct it as rapidly as possible.

According to officials of the Ontario Paper Company, and of the Anglo-Canadian Pulp and Paper Company, both of which have interests in the district, Manicouagan is destined to become a city of 10,000 inhabitants within a few years. Plans are laid down for a model city.

International's Power To Be Increased

The *Ottawa Citizen* carries the following announcement:

"The Canadian International Paper Company, which originally proposed to instal but four units at each of the Chelsea and Farmers' Rapids power plants, has decided to add another unit to each power house when completed, which will increase the maximum capacity of the two plants for power production, by 58,000 horse power.

"The power development at Chelsea, as at first planned, was for 36,000 h.p., and will be increased to 70,000 h.p., while that at Farmers' Rapids will be increased from 96,000 to 120,000 h.p.

"Apart from the 260,000 h.p. which has been sold to the Ontario Hydro-Electric Commission, and which will be furnished almost entirely by the Paugan Falls development, the company has allocated 50,000 h.p., for use in the province of Quebec.

"It will also have in reserve another 50,000 h.p. available for industrial use.

"There is a possibility of the projection of another power development at Six Portages, or Nigger Rapids, on the Gatineau River, near Burbridge, which is under consideration and from this source 65,000 h.p. would be available, if developed as a low unit proposition.

"The electric installation at the Kipawa mills is to be increased from 6,000 h.p. to 24,000 h.p."

The *Citizen* further states that A. R. Graustein, of New York, president of the International Paper Company, after making a survey of the construction work at Chelsea and Farmers' Falls Saturday, announced that the company expected to be generating power in both plants early next year.

International in Newfoundland

The report has reached Montreal that the International Paper Company has acquired 75 square miles of timber lands at White Bay, Newfoundland, and expects to take out 25,000 cords of pulpwood this year.

Tidal Development in New Brunswick

The Private Bills Committee of the House of Commons at Ottawa took up the question during the week of granting incorporation to the Canadian Dexter P. Cooper Company for the development of tidal water in Passamaquoddy Bay, on the international boundary between New Brunswick and Maine. Decision was postponed, however, until the committee meets at a later date, so as to enable certain members interested to attend.

Alex. Johnston, Deputy Minister of Marine and Fisheries; J. B. Hunter, Deputy Minister of Public Works, and J. T. Johnston, of the Dominion water power and reclamation services, Department of the Interior, representing the three federal departments concerned in the undertaking, had no objection to the committee approving the bill and reporting it to the House. So long as plans for the scheme had to be submitted to their respective departments for approval, and also to the International Joint Commission, they did not think that public rights would be jeopardized by the passing of the bill. When the plans were submitted to the departments, which would have to be done if the bill became effective, consideration would be given to the scheme to safeguard fisheries and public rights.

News Print From Port Alfred

News print production will commence at the Port Alfred mills, near Chicoutimi, on June 1, according to officials of the company. Up till now the company has been manufacturing pulp.

Donnacona To Remain Separate

Officials of the Donnacona Paper Company of Donnacona, Que., deny the report of the transfer of control of the property to interests close to the St. Maurice group.

Paper Mill For Winnipeg?

S. W. Backus, vice-president of the Bachus-Brooks interests, states that a pulp mill will be erected by his firm at Winnipeg providing satisfactory arrangements can be made for getting power.

Paper Business Fairly Active in Chicago

Conflicting Viewpoints Expressed by Leaders in Fine Paper Industry—Heavy Demand Reported for Coated and Plain Book Papers—Volume of Coarse Paper Orders Said to be Actually Picking Up—Paper Board Men Optimistic Over Future Outlook

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 21, 1926.—Nearly all handlers of paper (except that used in the confectionery trade) admit that business has fallen off considerably, but there is some difference in viewpoint as to when the demand will resume normal proportions, and as to what might be properly termed a normal amount of business. There is really no established procedure to guide managers of paper houses in this respect, so naturally they voice their personal feelings—thus the human equation enters into any attempt to sum up the present general situation.

It is in the line of fine papers that one encounters the most pessimistic attitude; and in view of the excellent business that has been received during the year up to May first, there is not yet heard any vociferous assertions that the paper business is going to the dogs. One large concern, in fact, stated that business is really fair at the present time, with a very heavy demand for book papers, both coated and plain, and the majority of the mills behind on orders. The head of this company believes that the demand will hold up until June 15, at least.

In contrast to this is the opinion of the president of another concern, which handles fine papers in large quantities, to the effect that prospects are not so favorable as is generally believed and that it cannot be estimated when conditions will improve—"certainly not before fall," he asserted. The trouble, he pointed out, is that there is a over-production at the mills, resulting in a surplus that will have to be consumed before paper handlers can reasonably expect increased buying. The unsettled European situation was also cited as a contributing cause of dull business conditions in America. "I have observed," he stated, "that when everything is going well on the other side of the Atlantic, everything goes well on this side."

So there you are, and thus it goes. Take your choice. Two leaders in the fine paper industry taking opposite viewpoints, and each convinced of the accuracy of his own surmise. Under the circumstances, one might feel justified in taking a middle-of-the-road position; but there always looms up the possibility of one or the other of these observers being right. The middle path was indeed chosen by a few sales managers, who stated that business is in a fairly good condition right now, when it is considered that June, July and August are expected to show a seasonable slackness; and that because of the good business already transacted this year, it will have been found in very satisfactory condition when the books are closed at the end of the year.

Coarse Paper Demand Fair

In the coarse paper branch of the industry one of the leading Chicago houses reported the demand as being pretty fair just now, with the volume of orders actually picking up. This applies to the various items and grades of coarse paper stock, the demand for which seems to be about on the same level, it was stated. With this house the business secured so far has shown a little improvement over that of April, although it was recognized that this condition may not be general, and that it would be hard to tell what effect the coming warm weather would have. It is assumed, of course, that the usual slackness of orders will prevail, but if a paper house should land a substantial order or two, then right away that house begins to view conditions through rose-tinted glasses, and "business is fine and prospects excellent."

So, when everything is considered, it will be seen that the human equation does play an important part when a survey of business conditions is made. One factor of satisfaction is that if somebody is getting business, there is still business being transacted, and it cannot be said that demand is so dead that there is no use going after it. With such efficient selling organizations as exist in the paper houses of this city, some degree of encouragement will be seen in this situation, and they will act accordingly.

Paper Board Situation

Paper board men are merely viewing the slow-up in demand in placid anticipation of a brisk fall business. There is always a dull period late in the spring and at the end of the year, so that no alarm is felt at the present scarcity of orders. Business was quite satisfactory up to within the past few weeks, and will be so again from late summer to inventory time, it is generally acknowledged by those who supply material to the box-making factories.

Packers of old papers say that the supply is in excess of the demand at the present time, but no worry is felt on that account. In June, July and August there is going to be considerable lessening of accumulations, hence handlers of old paper are looking forward to an improved market to begin during the latter part of August. The mills are not very active, some being short of orders just now, but it is believed that the demand will overcome this difficulty very shortly. Mixed papers are the most active at the present time. Chicago is amply supplied with concerns dealing in old papers, though their operations differ in some respects. For instance, a few firms go to considerable effort in assorting and grading, which enables them to offer a wider range of prices than those houses which merely bale up the mixed grades.

Paper Specialty Houses Active

The optimistic note on the business lute is sounded by the paper specialty houses, especially those who cater to the confectionery trade. When hot weather comes, bringing desuetude to the greater proportion of the paper industry, it is the period of greatest activity with those who supply the thirsty public with drinking cups and an extensive line of confectionery papers. Business is good right now, despite the fact that winter overcoats are still comfortable as this is written; and the tendency is for an improved demand as the weather becomes warmer. Therefore, the paper specialty houses are having their inning now, which they are endeavoring to make continuous throughout the year by handling such staples as wrapping paper, boards, twines, etc., in increased quantities.

It is not difficult to describe business conditions in the roofing stock branch of the industry. Demand is very quiet and prices are low, this being the usual state of affairs at this time of the year. As everybody knows, there will be a resumption of activity in the fall, with the consequent stiffening of prices.

Simplified Sizes for Booklets

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 26, 1926.—Adoption of standard paper sizes, from which 14 booklet and folder sizes could be cut without waste, brought a problem in the size of envelopes for booklets of simplified sizes, according to the Simplified Practice Division of the Department of Commerce. One paper company and an envelope company, by cooperating on the problem, have produced a portfolio showing standard sizes of mailing pieces and envelopes, which, when sent out to thousands of buyers, brought order from the chaos which had threatened, and resulted in a big influx of business in the simplified sizes. Much time in estimating and delivery has been saved.

Raw Materials of Proven Reliability

MATHIESON
Chemicals

Liquid Chlorine
Bleaching Powder
Caustic Soda
Solid-Flake-
Ground-Liquid
Soda Ash
Aqua Ammonia—26°

THE manufacturer with a good name to uphold safeguards his product by purchasing only raw materials of proven reliability.

True buying economy subordinates price to a far more important consideration — the reputation of the supplier for consistent fulfillment of all quality and delivery agreements.

The MATHIESON ALKALI WORKS Inc.
250 PARK AVE. NEW YORK CITY
PHILADELPHIA CHICAGO FAIRMONT, W.VA. PROVIDENCE CHARLOTTE

Caustic Soda - Liquid Chlorine
Bicarbonate of Soda
Anhydrous Ammonia

Soda Ash - Bleaching Powder
Modified Virginia Soda
Aqua Ammonia

Deal Direct with the Manufacturer

Uniform Materials Make Uniform Products

Toronto Paper Market Continues to Expand

Figures for May Business Considerably Ahead of Preceding Month's Showing — Book and Writing Papers Enjoying Good Demand—Manufacturing Stationery and Envelope Business Very Satisfactory at Present—Wall Paper Plants Busy

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ontario, May 24, 1926.—Trade in the paper industry continues good and jobbers reported quite an increase of orders during the past few days. If the business keeps up for the remainder of May, the showing will be much ahead of last month, which was a rather quiet one owing to the inclement weather and backward season. In the book and writing line, conditions are favorable to the companies participating in this trade. So far nothing has developed which might be construed as entirely unfavorable, while many factors surrounding specific products show marked improvement. The Provincial Paper Mills, the Howard Smith Paper Company and others, are reported to be experiencing a betterment in earnings and are expected to show improved results in their annual reports. Business in manufacturing stationery and envelopes is also very good at the present period, while wall paper plants are busy.

Sale of Mill Assets Postponed

Justice Middleton, on the application of J. P. Langley, Toronto, custodian of the properties of the Mattagami Pulp and Paper Company, Toronto, whose sulphite pulp plant is located at Smooth Rock Falls, Ont., and has been in a state of liquidation, has postponed the date fixed by the Master of the Supreme Court for the sale or reorganization of the properties from May 29 to October 10, 1926. An examination of the properties will take place in the meantime by the prospective purchasers. G. T. Clarkson, receiver for the National Trust Company, who is trustee for the first mortgage bondholders, stated that he would try to raise funds for maintenance in the interim and that he would also endeavor to arrange the payment to the bondholders of a year's interest on their money. The sum of $750,000 will be required for the maintenance of the property.

Selling Big Hardwood Area in North

The sale of eighteen townships and parts of townships near Sault Ste. Marie, Ont., comprising the hardwood on some fifteen hundred square miles has been made by the provincial government to Ontario, Hardwoods, Ltd., a United States organization, which will cut fifteen million feet the first year and twenty-five million feet annually the following years. The price paid for the wood is $2.50 per M feet, plus dues of 50 cents. The company will spend a million dollars upon plant construction and the mills and factories must be built upon the property of the organization somewhere between Sault Ste. Marie and Thessalon. The company will erect a sawmill, a hardwood flooring plant, veneer factory, etc. It is understood that American capital is behind the enterprise, W. Parkinson, of Akalyn, Wis., conducting the negotiations. The parent company has already several plants in operation across the line and the market for the Ontario branch of the concern will be in Ontario, but mostly over the line. The company will commence operations in 1928 and is obligated to employ a thousand men. The timber must be all manufactured into a finished product within the province, owing to an embargo imposed on hardwoods cut in Ontario which was passed by the government some two years ago.

Much Pulpwood from Settlers' Lands

Along the Temiskaming and Northern Ontario Railway and the Transcontinental Railway to Heart, Ont., it is estimated that the pulpwood cut ending June next will reach between 600,000 and 700,000 cords, including the consumption of Northern mills. Fully 75 per cent of this year's cut of wood has come from the lands of the settlers. The rivers are now open, and driving has commenced. A feature of the general situation is that the production of pulpwood by settlers, which reached its maximum height in the last three years, has started to recede, due to the fact that many of the areas, which were previously productive, have become cleared and no new large areas appear to be available for opening up and homesteading. E. E. Johnson, president of the Pigeon River Timber Company, Port Arthur, says that his company last season took out 12,000 cords of sap peeled and 33,000 cords of rough pulp wood. Mr. Johnson adds that the market was the lowest for many years, due to the comparatively small demand for 250,000 cords by all the mills buying in the Thunder Bay district. Next year the district will likely be called upon to supply about 450,000 cords, which should create an active market. Right now there is a call for upwards of 50,000 cords of peeled pulpwood but with little production, due to the small price offered by the mills. The Hawk Lake Lumber Company, of Cochrane, are slashing, peeling and otherwise handling during the coming summer months some 35,000 cords of pulpwood. Operations for next winter, the company state, are uncertain as yet. Weather conditions have been very backward, the river drives twenty days behind last year, but the flow of water in the streams is quite satisfactory.

Power Co. Sued for Damages

The case for the defense has begun in the courts at Toronto in regard to the action of John Stirrett & Co., lumber and pulp wood dealers, of Port Arthur, Ont., against the Kaministiquia Power Company and the Hydro-Electric Power Commission of Ontario. The amount of damages asked is for $400,000. The plaintiff's side was concluded at Port Arthur in December last. The claim is based on the assertions that, in the seasons of 1922-23 and 1924-25, Stirrett's cuts of logs were tied up and the tug stranded by reason of the action of the Kaministiquia Power Company, which control the waters in Dog Lake dam for power purposes and prevented the logs being released until October of each year, too late a period for the profitable sale of them.

Notes and Jottings of the Industry

Robert Currie, of the Dominion Paper Company, Montreal, spent a few days in Toronto last week on business.

W. B. Shibla, of the Chicago Card Board Company, Chicago, Ill., was a business visitor to Toronto during the past few days.

The paper mills along the Welland canal in Thorold, Merritton and St. Catharines have been partially closed down during the past week owing to the annual "housecleaning" of the canal, which necessitated the shutting off of considerable power used by the plants.

Among the Toronto paper men, who paid a visit to Montreal last week on business, were R. I. Finlay, of the United Paper Mills, Fred W. Halls, T. J. Macabe and Bruce Munroe.

The United Paper Mills, of Toronto and Hamilton, have just issued some neat advertising literature showing satin finish Beveridge bristol in white and nine colors.

Several sawlogs and two hundred cords of pulpwood owned by the Hammermill Paper Company, Port Arthur, were destroyed recently in a forest fire which raged fiercely at Big Trout Lake on the northern shore of Lake Superior. Late rains have greatly improved the fire situation in the timber limits of Northern Ontario.

N. E. Wainwright, of the Provincial Paper Mills Company, Toronto, spent the past week in Montreal on a business trip.

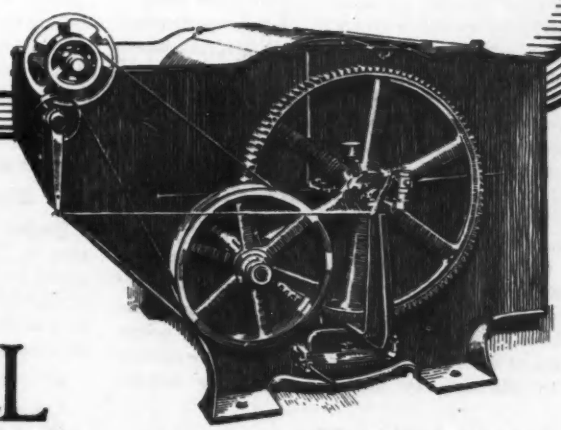
Work has commenced on the new soda pulp mill of the Canadian

(*Continued on page 74*)

Dollars *and* Sense

The Save-All that saves you the most dollars is the Save-All for your mill, isn't it?

The Bird Save-All is a common sense pulp saver and white water filter that (first cost, operating cost and maintenance considered) returns the most dollars.



The BIRD SAVE-ALL

9254

BIRD MACHINE COMPANY **BIRD** SOUTH WALPOLE, MASS.

MACHINERY

Paper Trade Drifting Along in Philadelphia

Distribution Almost Dependent Upon Small Lot Buying—Volume of Sales, However, Exceeds Last Year's Figures for Corresponding Period—Prices Rule Steadier Than for Many Years at This Season—Consumption of Coarse Paper Generally Expanding

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 24, 1926.—While paper sales seem to drag along in a listless market and apparently the trade has drifted into a quieter channel, many of the dealers express surprise at the amount of business which really is being done and accounted for in the summary of the entire orders accumulated throughout the past fortnight. In actual figures the volume of paper sales bulks slightly over the same period of 1925 while the daily orders are confined to a minimum and in very small quantities to meet only the moment's needs. It is this small lot buying, which in itself is deceptive of the true conditions of the paper market, that the present paper distribution is almost entirely dependent upon. Salesmen have difficulty in securing any sizable purchases, except where contracted for earlier in the year. Prices, however, are more steady than for many years at this season and there is conspicuously absent that seasonable cutting of values in order to stimulate the diminishing business customary as the summer months approach.

Small Lot Purchases of Fine Papers

Though the distribution of fine papers is more generalized, orders are confined to small lot purchases for immediate consumption. As the seasonal spring business lessens in volume, the consumption of papers is accordingly confined to a minimum to meet the necessary needs of the moment. The larger printers and publishers, of course, still continue to operate at a normal speed, but their paper supplies have been taken care of under contract so that their present activity does not influence the local market, most of the paper being shipped direct from the mill.

Coarse Paper Consumption Spreading

Volume orders for coarse papers are notably absent, but the demand for these grades has become more of a generalized type. Wrappings, krafts and specialites, are all moving in small lot shipments, but bulk in larger volume than in the same period of last year. In the coarse paper market, the most gratifying factor is the absence of price slashing which customarily takes place at this season in order to stimulate business. Krafts particularly have been maintained at more profitable levels. Waterproof papers have been in more frequent demand for shipping purposes by the manufacturers of mechanical equipment and florists. Mills who are fortunate in having low manufacturing costs report to the local dealers that they are well booked ahead on kraft and wrappings, but those manufacturers who do not having this advantage of low overhead have not been faring so well. Tissues have been fairly steady, but toilets, on the other hand, are weakening. The 1,000 and 2,000 sheet rolls are quoted at the lowest prices within a decade owing to the keenest of competitive bidding for orders by out of town manufacturers. Culls are offered at below cost of manufacture. Sulphite manilas have been holding steadily. Bogus wrappings have been inclining towards the lower scale of prices, cost of manufacture of these grades having been materially reduced through ability to purchase raw materials at greatly reduced levels.

Paper Trade Elects Officers

At the quarterly meeting of the Philadelphia Paper Trade Association, held in the Chamber of Commerce, the annual election of officers for the following year was held. Those who were elected were President, David Lindsay, Jr., Lindsay Brothers; Vice-President, T. H. B. Smythe, the J. L. N. Smythe Company; Treasurer, Richard Hartung, A. Hartung, Inc.; and Secretary, Harry Donahue, the Molten Paper Company. They succeed Morgan H. Thomas, Simon Walter, and Joseph Miller. President Lindsay was the treasurer of the Association in the past year.

Wedding Bells To Chime For John Murphy

While the organ tunes in with the Solemn Nuptial Mass at the Cathedral of SS. Peter and Paul, on June 3, wedding bells will echo the joyous event of the marriage of John A. Murphy, head of the Daniel I. Murphy Company, 4th and Chestnut streets, one of the largest brokers in paper stocks and wholesale rag importers in this section. The younger Murphy, who is the son of Daniel I. Murphy, founder of the company, now retired, will be united in marriage with Miss Irene Thorne, of Rochester, N. Y., granddaughter of George Kelly, a large furniture dealer of this city. Father Storck, a noted Jesuit, will perform the ceremony at the Cathedral. Following the wedding there will be a reception at the Bellevue Stratford Hotel, and honeymoon at Atlantic City. Many trade associates have been invited to the reception at the Bellevue, among them being out of town guests from the paper industry.

National Paper Box Association Convention

Local paper dealers specializing in paper box manufacturers' supplies will participate in the annual convention of the National Paper Box Manufacturers Association to open here this week at the Ben Franklin Hotel on May 25, continuing to May 28. Among the paper houses to join in the meeting and exhibitions coincident to the convention are the Charles Beck Paper Company, Matthias & Freeman, the Paper Service Company, A. S. Datz & Son, Louis De Jonge & Co., Philip Rudolph & Son, A. Hartung, Inc., and the Philadelphia Paper Manufacturing Company. It is anticipated that more than 1,000 box makers and supply men will attend the convention.

Local Mill Superintendents To Attend Convention

The full quota of mill superintendents comprising the newly organized Pennsylvania and New Jersey Division of the American Paper and Pulp Superintendents' Association, will journey to Detroit to attend the coming national convention of the organized mill executives at the Book-Cadillac Hotel in the automobile city, June 3, 4 and 5. The delegation will be headed by President J. Garfield Ramsay, of the local division, superintendent of the Dill and Collins Flat Rock Mills. Following the Detroit gathering the local division will hold its second meeting since its organization last January in the latter part of June, at a date not yet decided upon.

Philadelphia Wholesale Stock Merchants To Meet

Quaker City wholesale stock dealers will meet in quarterly session on June 3 at the Hotel Lorraine, a meeting having been called for that date by Secretary William J. McGarity, Sr., of the Philadelphia Wholesale Waste Merchants Association. There will be a social touch to the session in a dinner to precede the routine business program.

Ault & Schmidt Not Affected By Fire

Although a large percentage of paper stored in the warerooms of the Ault & Schmidt Paper Company was destroyed in the recent fire at the mills in York, Pa., it has not materially affected shipments of paper manufactured by that concern. A notice sent out by the manufacturer during the week, while making no mention of the fire, stated that the company was in a position to make shipments on its excellent grades of medium priced krafts. All the Philadelphia dealers who are patrons of the company were notified to this effect within the week. It is understood that the fire did

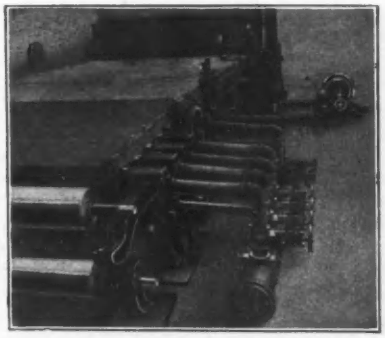
A new Standard of Efficiency

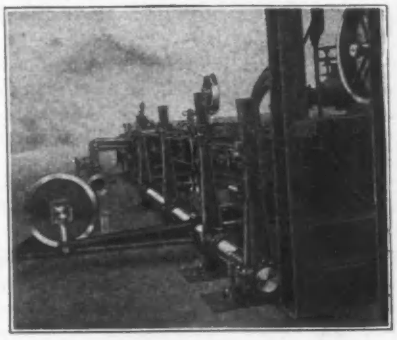
A MUCH-ABUSED word, "efficiency"; yet doesn't it, after all, clearly and concisely picture to you the millenium toward which papermakers strive?

Efficiency simply means modern advancement, keeping up with the procession, being able to meet competition in output, and lowered costs. The efficiency of a half century ago (and upon which some mills still persist) certainly isn't the efficiency of our present high speed generation. The standards of today cannot be compared to the standards of the past.

The NEW BELOIT FOURDRINIER, with its Adjustable, Removable, and Shakeable characteristics, is distinctly a modern idea, designed to keep pace with modern demands of speed. By eliminating time and labor it is automatically increasing production and lowering costs.

Perhaps you would like to know what others think of the "Beloit." Let us send you the proof.





Record Production

"We certainly want to congratulate you on this production. This is, as far as the writer knows, a record production for a high-speed news machine."

The NEW BELOIT FOURDRINIER

BELOIT IRON WORKS — Beloit, Wisconsin, U. S. A.

not cause any interference with the mechanical units, having been confined chiefly to the storage and warehouse departments.

Paper Men Join in Outings

Three outings of the week were notable in attendance of trade associates who joined in the diversions offered in the social and sporting programs scheduled as part of the Maytime open air events.

Paper Box Supply Men Enjoy Outdoor Gaieties

Paper men associated with the box making trades were among the members of the Philadelphia Paper Box Manufacturers Association who journeyed to Kugler's Mohican Club on the Delaware, to participate in the annual spring outing of that organization. A program of sports, aquatic events, and a shad dinner made up the afternoon's program. Among those from the trade supply houses who spent a social afternoon with the box makers were John Datz, Howard Marcus, and Joseph Mearz, of A. S. Datz & Son; Carl Neiholm, of A. Hartung, Inc.; Harvey Hearl, of the Garrett-Buchanan Company; Howard Shaefer, of the Philadelphia Paper Manufacturing Company; Roger Wood, of Philip Rudolph & Son; Elmer Renner, of the Charles W. William Company, Samuel S. Shryock, of Shryock Brothers, and Bert Dietrich, of the Paper Service Company.

Trade Associates Join in Poor Richard Celebration

Having been honored by election to the highest office in the Poor Richard Club, the Philadelphia fraternity of advertising men, the newly elected president, Morton Gibbons Neff, of the Dill and Collins Company, shared in the great spring frolic of the membership of that organization during the week, and further attained recognition as one of the notable golfers in the contest on the links along with another trade associate, W. S. Wilcox, of the Wilcox Walter Furlong Company. President Neff, whose election to the presidency was announced in the early part of the week, made the low score of 86, while Mr. Wilcox went still lower with his 83, both being among the prize winners. This is the second paper man who has been honored with election to the official body of the Poor Richard Club, the other being the retiring vice president, Norbert A. Considine, of the Paper House of Pennsylvania, who twice served in the capacity of vice president. President Neff is also a member of the board of directors of the club and chairman of its speakers committee. His inauguration will take place in the early days of July.

Local Golfers Join New York Enthusiasts

Two members of the Philadelphia trade joined their brethren golfers in the New York Paper Trade Golf Association contests last Wednesday, when Arthur B. Sherrill of Riegel & Co., Inc., and President Eugene W. Fry, of the Jessup and Moore Paper Company, with his associates, E. A. Weihenmayer, went to the Metropolis for the purpose of joining in the annual spring golf tournament.

Universal Paper & Twine Co. in New Quarters

Removal to larger quarters in the Bailey Warehouse at Delaware avenue and Bainbridge street has been effected by the Universal Paper and Twine Company, of which Morris P. Lowe is head. The firm formerly was located at 118 N. Water street. In the new home, larger stocks of paper and coarse specialties and twine are carried.

H. A. Copeland Sales Co. in New Location

H. A. Copeland, who just has organized his own business as the H. A. Copeland Sales Company, after conducting a mill representation business, is now quartered in offices in the Franklin Paper Company Building at 810 Sansom street. He will specialize in die wiping papers and coarse specialties.

Holds Production on Butchers Fibre

Since the recent retirement of other manufacturers from the butcher fibre production field the business of the Bayless Manufacturing Company has been steadily increasing. The Bayless Company is engaged in the manufacture of these papers at its Austin, Pa., mills, and is now running steady on these grades according to its announcement to local dealers. The business has increased since the Hartje Manufacturing Company and the Cherry River Paper Company discontinued the production of these fibres. Representative Scott of the mills was a caller on the dealers last week.

Edwin T. Garrett Paper Co. May Reorganize

It is understood that the creditors of the Edwin T. Garrett Paper Company, of Lansdowne, may permit a reorganization of that company and the resumption of manufacture of tissues in which the firm specialized. The bankruptcy proceedings were more in the nature of a friendly action as a result of the heavy expenses which the manufacturer incurred in the rebuilding of his plant in order to house the large tissue machinery which was purchased from the Scott Paper Company, of Chester, Pa. Plans now are being negotiated with a prominent and capable authority on tissues, at present associated with another concern, to join in the Garrett Company as a stock holder under reorganization and to again resume the manufacturing of these commodities in the mills in Lansdowne. It appears that the creditors are willing to permit the reopening of the mills under these plans, and that the final action in the receivership has been postponed awaiting further developments of the reorganization of the company.

Marinette and Menominee Improvements

MARINETTE, Wis., May 24, 1926.—The Continental Paper and Bag Mills Corporation of New York City plans to make extensive improvements this summer in the local Mills of its subsidiary, the Marinette and Menominee Paper Company. Each year since this progressive company acquired ownership of the local mills, a definite construction and building program has been carried out; the work contemplated for this year will affect several departments of the Plant.

Plans have been laid for the construction of a new Sulphite screen room at the Park Mill. The building will be of reinforced concrete and steel, and will be equipped with modern machinery. When completed, the capacity of this department will be materially increased, and the quality of the sulphite pulp will be further improved.

New acid tank systems are being installed at the Park and Menominee Mills to meet the demand for the greater quantity of acid required for the increased output of sulphite pulp. This installation will completely round out the program of remodelling the rebuilding and the Acid Plants.

Additional wood preparing machinery has been purchased; delivery is being made, and installation will commence shortly.

Further improvements are contemplated to the paper making machinery at both mills. New equipment of modern design is being installed. Contracts have been let for the latest type of Drying and Ventilating equipment.

A power transmission line has recently been completed, which insures a continuous source of electric power. Maximum production can be maintained under practically all conditions, and delivery of orders thereby made certain.

Through this progressive policy of continuous improvement and expansion, the Mills have been enabled to turn out a high grade product. The changes to be made during the present summer will increase the quantity of the company's output, and will produce a still further improvement in the quality.

In addition to the improvements outlined above, another building project of somewhat larger proportion than the construction of the new Screen Room, is being contemplated.

Manitoba's Paper Town

Work is proceeding in the laying out of a model paper town at Pine Falls, Man., the site of the mills of the Manitoba Pulp and Paper Company, and already large quantities of building material have been taken there from Winnipeg. Work on the mills is ahead of schedule, and it is expected that they will be ready for operation by November 1.

NORWOOD PAPER FINISHING MACHINERY

"The Standard for Over 30 years"

One feature of the Norwood Engineering Company's ability to serve is strictly in line with the progressive policies of modern business—that is—our type of organization.

Norwood Engineering Company is composed of a group of engineers with years of experience in serving the paper trade, and is so organized that the service of every department is continuous and satisfactory.

Young men are continually coming into our organization and growing up with us. No one man or department head is absolutely necessary to the continuance of intelligent service to our customers. If death, resignations or changes "for the good of the service" occur, the wheels of our organization continue to operate smoothly, for there is always someone capably trained and ready to fill the gap.

Thirty-three years of continually building up our organization and improving our products has obviated the necessity of any complete new designing or drastic changes in construction of our paper machinery.

Norwood paper mill products include super-calenders, both the web and sheet type, friction calender, burnishing calenders, glassine calenders, platers, rag thrashers, fan dusters, railroad dusters, Pope's refining engines and screens.

The many paper mills that we have served agree that Norwood quality is unsurpassed and Norwood prices are consistent. It will be to your advantage to have Norwood specifications and prices, before placing your orders for new equipment.

The services of our entire corps of engineers is yours to command. We are open for consultation on new equipment or to co-operate with you in any other way possible.

NORWOOD ENGINEERING COMPANY
FLORENCE MASS. U. S. A.

Why No Training System?

By T. Linsey Crossley

Ninety per cent of the personnel of industry today is obselete. There, we had to start with a bang and that's it. No figures prove it. Few support it. Probably it's wrong. Very likely it's wrong. Maybe only eighty per cent is obselete—perhaps ninety-five. Whatever it may be, administration and operation are lagging behind material equipment.

Suppose we put it in another way. A large proportion of the personnel of industry today considers that honesty and hard work constitute a formula for success, or in other words, practical experience determines progress. This is not the case. Honesty and hard work only make possible continuance of hard work. They usually insure a job as long as arms and legs hold out, but that happens about the half century mark, and the rusty brain is little help then.

Hard Work and Honesty

Hard work there must be, honesty there should be, but upon these only, no towering cathedral, no far flung arch may be built to pierce the skies in beauty of proportion and spiritual appeal, or span the valley to make straight the ways of men—only dull abodes of daily drudgery and nightly recuperation for more drudgery. There will always be the woman satisfied to slice the tops off eggs for thirty years, or the steady man who was "damned" if he knew why he had hammered the wheels of arriving trains for forty years.

To turn the same number of the same size of nut upon the same size of bolt indefinitely, is work of fixed character requiring only a knowledge of how and when. The man who does that and that only has no reason to expect promotion or increased pay simply because he has been long at it. Yet we believe it a fair guess that ninety per cent of the personnel of industry today gives or expects advancement on the basis of punching the clock longer, or having "pull."

Discontent, imagination, and hard thinking are the other concomitants of industrial success. But even as hard work and honesty in themselves are insufficient, so discontent and imagination are inadequate. Each must supplement the other. The man of imagination must be also a worker and study ahead of his job.

More work, more thought, should be cause for more pay. Some employing corporations see this and provide opportunity for advance to the employee who is willing to work and think more. They constitute a minority of the aggregate. Success achived by them will inspire others, it is expected, but the others may need some surgical attention.

Yielding to Mass Production

In the paper, textile, and other industries, craftsmanship is yielding to mass production. Those industries used to provide for self perpetuation by systems of apprenticeship, wherein the future craftsman was held in practical bondage for long periods, for the privilege of picking up such fragments of the inner mysteries as were grudgingly thrown to him in the process of using him as the craftsman's drudge.

Industrial liberty and free schools gradually destroyed that system but its hierarchy made no provision for its successor.

Into this situation is being projected an increasing number of men with scientific training, who, finding the professions crowded, have turned their attention to industry, not as engineers, or chemists, but as workmen, with this difference, that they wish to master the industry, not for a job and pay envelope, but for a life work.

Further, our educational systems now are sending into industry boys with a higher degree of preparation and greater expectations than was the case even twenty-five years ago. These two classes of employee find no preparation made to receive them, but instead a tyrannical system of advancement by seniority and personal connection or "pull".

No one denies that judgment ripens with age or that personal contacts are of very considerable value, but of themselves age ossifies, and friendships fall to favoritism.

There are 130,000 employees, more or less, in the pulp and paper industry of the United States and Canada. With endless opportunities for self study or night schools, we believe it is not overstating to say that less than three per cent of these employees are doing anything for self advancement, or finding provision by the industry of opportunity for increasing their knowledge or adding to their pay envelope.

Grounds for Hope

There are grounds for hope, however, that ere long some system of general application may be devised and put into operation.

The organization of the technical men some twelve years ago and the superintendents a few years later, provided machinery for the production of text books, and interest sufficient to develop agencies for study of the industry.

We are still faced with the fact that only a notably small proportion of the men and women engaged in the industry are giving it a thought beyond job and pay check.

The paper industry is probably the best organized in America today. Its chief executives are organized, its skilled and unskilled labor is organized, its superintendents, technical men, salesmen, and cost men are organized, yet it has not devised a plan for its own progressive perpetuation. Why is this? Chiefly because the material progress of industry has outstripped its mental development which is another way of saying that its personnel is obsolete.

Raw material of all kinds has been subjected to research and investigation, and its conversation has been matter for great expenditure, but almost the only provision made by one of the greatest American industries to conserve human raw material has been the contribution of $50,000 for a set of text books. This is just about one-fifth of the annual provision of one electric corporation for the training of its future personnel.

Obvious Difficulties

There are quite obvious difficulties due to the varied nature of the industry, but the greatest obstacle is the fear or dislike of spending a little money for work to which ninety per cent of the personnel is blind or indifferent.

Superintendents or technical men cannot spend company money, their position is advisory only, but there is very little doubt that any system upon which they can agree will be adopted by the industry.

The great hindrance to any developement of this nature is covered in the phrase "counsels of perfection." Some system apparently is expected to spring fully armed from the head of Jove, function immediately and occasion no direct expenditure. Manifestly there is no such system. The writer ventures to suggest a plan. There are two requisites to success in this work. Both involve expense.

Plan for Mill

(1) The employee seeking opportunity must spend some of his own time and energy, and sacrifice, for the time being, some earnings.

(2) The company must be prepared to spend a little money and a lot of thought.

1. Education and training should be a part of the company's policy and come before its directors.

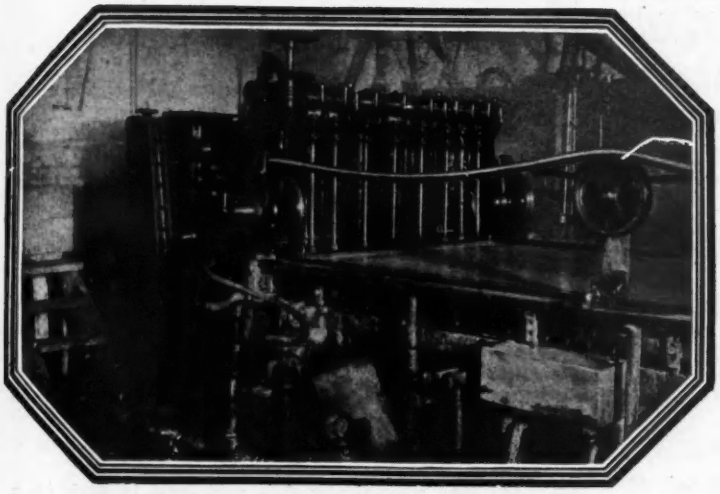
SPECIFICATIONS for ONE 224" FOURDRINIER MACHINE

SLICES

None to be furnished. Machine will not require same with the Voith High Pressure Stock Inlet.

VOITH HIGH PRESSURE STOCK INLET

Machine to be equipped with one complete Voith High Pressure Stock Inlet having all necessary adjustments as required. To be equipped with hinged type flexible nozzle.



Many purchasers of new paper machines now have Voith Inlet Equipment specified in the machine builders contract. Within the past four months six orders have been received for Inlets to be attached to new paper machines when completed. One of these orders calls for a 226" paper machine installation and another for a 224" machine. These machines are to operate at a speed ranging from 1200 to 1500 F.P.M.

Specify Voith Inlets in Your New Paper Machine Contracts

If you are considering the purchase of a new paper machine it will be to your advantage to have Voith Inlet Equipment incorporated in the regular machine specifications.

The Inlet represents a very small fraction of the cost of a new paper machine and the improvements and cost saving advantages obtained will enable you to secure maximum returns from the investment.

The construction and operating features of the Voith Inlet not only makes it readily applicable to your paper machines but also makes it adaptable to your product and conditions existing in its manufacture.

Write Today for Illustrated Voith Inlet Booklet

VALLEY IRON WORKS CO.

APPLETON, WISCONSIN

New York Office: 350 Madison Avenue

2. There should be an agreement covering intention on the employer's part, either in the matter of undertaking a training, a correspondence, or other course.

3. The plan should be understood and accepted as fair by the other employees.

4. It should be supervised by a committee representing management and operatives.

5. It should be voluntary and open to all who are prepared to submit to the ruling of the committee in charge.

6. It should be administered by a competent person, compensated adequately for the time and thought given. One good man should be engaged on full time basis in larger mills. Smaller mills could be grouped for one man to a group.

7. In addition to agreement to serve in the mill, the employee taking training should be required to follow some definite course of study at the company's expense.

8. If the employee wishes to discontinue, he may do so upon due notice, and reimbursing company for expenditures other than the pay agreed upon.

9. There should be a definite period.

10. Entry should be voluntary and by application to the committee.

With these general provisions agreed upon it does not appear necessary for any organization to endeavor the well nigh impossible task of evolving details to be practicable in all mills. Each mill committee could decide these.

An arrangement on these lines would involve a minimum of expense and a definite start could be made.

Plan for Industry

The industry as a whole could undertake some such plan as the following, which if taken up by even fifty per cent of the mills. would probably be self supporting.

EDUCATION AND TRAINING
GENERAL OUTLINE

1. Finance
   (a) Industry guarantees $5,000 per annum.
   (b) School or schools repay to the industry 25% of the amounts received by them from mills or individuals in mills.
   (c) Amount required about $10,000 per annum.
2. Personnel.
   (a) One International Field Operative and Educational Secretary with one or two stenographers.
   (b) Committee of three in each mill to approve candidates and oversee operation of courses or progress of apprentices.
3. Character of Work or Training.
   (a) Self-study by any individual.
   (b) Voluntary course of training and study by individuals entering the industry as a life work.
4. Schools Involved.
   (a) The Institute at Gardenvale under supervision and control of the industry, for Pulp and Paper Technology.
   (b) Other approved schools giving courses in Combustion, Engineering, Business Administration or Machine shop practice.

The school must accept financing arrangement to comply with this plan.

ORGANIZATION

(a) General Secretary.
To visit mills and conduct campaigns to arouse interest and explain courses, advising prospects.
To maintain records of progress of students, endeavoring to secure more constant adherence to courses, to rearrange where necessary, and to maintain file of all employees graduating from schools or completing courses.
To prepare statistical data and make reports to supporting associations.

(b) Local Committee.
Each mill to have a committee of three, one nominated by the management (preferably the personnel director), one nominated by a majority ballot of the employees, and a third mutually agreed upon by these two. This Committee's duties will be:

(1) To approve or disapprove applications for courses to be undertaken by employees where assistance or reward is offered by the company.
(2) To consider applications of persons wishing to undertake a course of experience with the object of making a life work of the industry.
(3) To receive reports of progress from schools and endeavor to keep men interested in their courses.
(4) To advise General Secretary of any criticism of schools by students.

OPERATION

This will effect two classes of employees as in section (3) of General Outline.

1. Those who wish to study some course.
   If the company through its committee approves the course as being one to increase the value of the employee, it will advance on his behalf, the cash price of such course, in quarterly payments, collecting from the employee such amounts weekly or monthly as will cover cost of course in one year or more as decided by committee. If the employee completes the course and is still in the employ of the company he will upon securing diploma or certificate, be repaid the amount he has paid for the course. If this student leaves the mill before he has completed payment for his course, he should pay the company to the amount of the current quarter paid by the company to school. If he wishes to discontinue, he can do so by paying the company in like manner.
2. Those who wish to enter the mill with a view to making it a life work.
   (1) These must first be approved by the committee (who should consult with superintendents or executive of department in which applicant is employed if he is not a new man).
   (2) They must signify their willingness to work for a definite period of years, say three, in such positions as can be available.
   (3) They must undertake at the same time to study a definite course in the technology of the industry to be paid for by the company.
   (4) They shall agree, if they decide to discontinue training or to leave the employ of the company, to repay to the company the amount paid the school for their courses.

Recognition

Upon satisfactory completion of the period of work and the study course undertaken, some form of recognition, possibly the right to use certain letters, such for instance as F. P. I. A., Fellow, Paper Industry America, might be conferred, or a special button, only to be used in such cases. The presentation of certificate, or button to be made by the senior association of the industry either in Canada or the United States, at either of their respective annual meetings, and with due formality, the employer to defray expense on this occasion.

Swedish News Print Production

WASHINGTON, D. C., May 26, 1926.—Swedish news print production during the month of March is reported to have reached a total of 17,940 metric tons (metric ton equivalent to 2,205 pounds), while shipments during the same month totaled 18,733 tons. The leading customers were: France (5,109 tons), the United States (3,900 tons), the United Kingdom (3,654 tons) and Russia (1,998 tons). Consignments also went to Central America, which took 819 tons, Argentina, Brazil and China, each of which took approximately 500 tons, and Japan, which took 380 tons.

Your Paper is Made in Your Beaters

Just think of it! A fast circulating beating engine that does not consume more power! Just what you want! Just what the papermaking world has long sought, and so simple and sensible and practical that you wonder why it was not done long ago.

The Dilts approved NEW TYPE beating engine is absolutely a "common sense" beater. Its time-saving and power-saving design immediately convinces the practical man, while the engineers place their stamp of unqualified approval on it. It is a real beater. It does all the things you want a beater to do. It circulates heavy stock, travels much faster than standard Hollander beaters, dumps quickly and cleanly, and uses no more power in performing this extra work.

A great many Dilts approved NEW TYPE Beating Engines are being installed. You also should use them. You cannot afford to neglect your beater equipment. "Your paper is made in your beaters."

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~15 PARK ROW~ NEW YORK CITY

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Shelton, Wash.—The Rainier Pulp and Paper Company has authorized plans for the construction of a new pulp and paper mill on local site. The plant will consist of several buildings, with machinery to provide for a paper output of about 75 tons per day, reported to cost in excess of $600,000, with machinery, V. D. Simons, 431 North Michigan Avenue, Chicago, Ill., is engineer.

Marietta, Ohio—The Rand-Kardex Corporation, North Tonawanda, N. Y., manufacturer of paper specialties, filing systems, etc., has tentative plans under advisement for the erection of a new addition to its Marietta plant, operated by one of its subsidiary organizations. It will be four-story, located on Green street, estimated to cost about $150,000, with equipment. Schenck & Williams, Third National Bank Building, Dayton, Ohio, are architects.

Downington, Pa.—The Kerr Paper Mills, Inc., plan the rebuilding of the waste paper house at its plant damaged by fire, May 16, with loss reported at close to $14,000. The reconstruction will cost close to a like amount.

Jackson, Tenn.—The Southern Folding Box Company, recently organized with a capital of $25,000, has leased space in the building of the Lohn-Johnson Printing Company, and will establish a plant for the manufacture of paper boxes and cartons. Machinery will be installed at an early date. The new company is headed by B. B. Johnson and A. J. Stegall, both of Jackson.

Monroe, Mich.—The Consolidated Paper Company has active work in progress on a new one-story plant unit and proposes to have the structure ready for machinery installation at an early date.

Camas, Wash.—The Crown-Willamette Paper Company, 248 Battery street, San Francisco, Cal., has awarded a general contract to the Lindstrom & Feigenson Company, Worcester Building, Portland, Ore., for the erection of two new additions to its mill at Camas, consisting of a two-story beater room, and a two-story finishing department, estimated to cost about $175,000, including equipment. It is purposed to have the structures ready for service in the fall.

Dallas, Tex.—The American Beauty Pass Book and Cover Company, manufacturer of paper specialties, has begun the erection of a new plant at Orange and Collin streets, to be one-story, 85 x 100 ft., reported to cost about $45,000, with equipment. J. A. Pitzinger, Dallas, is architect. C. T. Dean is president.

Indianapolis, Ind.—The Indiana Wall Paper Company has filed plans for alterations and improvements in its building at 28 East Maryland street.

Dublin, Ga.—The Southern Pulp and Naval Stores Company, 42 Broadway, New York, N. Y., C. M. Thorsen, president, is reported to be arranging preliminary plans for a new pulp mill on a local site, acquired a number of months ago. The initial plant will comprise several buildings, reported to cost more than $400,000, with equipment.

Monroe, La.—The Brown Paper Mill Company, Monroe, is said to have preliminary plans nearing completion for proposed additions to its mill for the production of kraft papers, and it is expected that bids will be asked at an early date. The company recently secured a tract of about 80,000 acres of timber lands in Ouachita and adjoining parishes, previously held by the Central Lumber Company, and will develop for a source of pulp wood supply. The entire mill expansion is reported to cost in excess of $1,000,000. George F. Hardy, 309 Broadway, New York, is architect and engineer.

Bellingham, Wash.—The San Juan Pulp Company, care of the Morrison Mill Company, Bellingham, is perfecting plans for a new pulp and paper mill in this vicinity. A contract for a part of the construction has been let to the Puget Sound Bridge and Dredging Company, Central Building, Seattle, Wash. The project is reported to involve in excess of $500,000.

Beaupre, Que.—The Ste. Anne Power and Paper Company, Montreal, Que., recently organized by interests connected with the Spanish River Pulp and Paper Company and the Abitibi Power and Paper Company, has acquired a local site for the construction of a proposed mill for the production of news print. Plans will soon be drawn for the initial plant units, to be equipped for an output of about 250 tons of material per day. The initial plant is slated to be ready in the spring of 1927, with other units completed closely following, reported to cost in excess of $1,500,000 with machinery.

Bromptonville, Que.—The Brompton Pulp and Paper Company has completed plans and will proceed with the erection of a new mill unit, estimated to cost close to $125,000. A contract for the building has been let to the MacKinnon Steel Company, Ltd., Sherbrooke, Que., including structural steel framing, etc.

Ottawa, Ont.—The International Paper Company, New York, is projecting plans for a third hydroelectric power plant on the Gatineau River, near Ottawa, using a power site recently secured through the purchase of the Hull Electric Railway Company from the Canadian Pacific Railroad Company. It is expected to begin work on the project early in the coming year. The company will also build two other similar stations on the same river, work on which has been started, with sites located at Chelsea and Farmers' Rapids. The three plants are expected to develop a total output of 400,000 hp., a portion of which will probably be disposed of on a long-time contract with the Ontario Hydroelectric Power Commission, and the remainder used for paper mill service.

Montreal, Que.—The Canadian Cellulose Company has completed plans and will begin work immediately on a new soda mill for the production of bleached soda pulp, on site owned by the Howard Smith Paper Mills. The new plant with two digesters and auxiliary machinery to develop a capacity of

This service makes friends for your paper

YOU secure dependable results from the use of Kalbfleisch Rosin Size. The service that you also get adds to the advantages of this sizing.

It is an established fact that the smooth operation of the sizing process is necessary to trouble-free production. So Kalbfleisch Engineers are glad to place at your disposal all the information they have acquired from their long and close acquaintance with sizing processes.

The service of Kalbfleisch Engineers is centered upon securing your satisfaction by means of the De Cew Patented Processes with which Kalbfleisch Rosin Size is used.

They are glad to cooperate with you to the end that your sizing operations will measure up to the highest standards of efficiency.

The KALBFLEISCH Corporation

200 Fifth Ave., New York

Factories:

Erie, Pennsylvania
Brooklyn, New York

Kalamazoo, Michigan
Elizabeth, New Jersey

Chattanooga, Tennessee
Waterbury, Connecticut

about 50 tons per day. It is expected to give employment to approximately 60 men. The new mill is slated to be ready for service early in 1927, and is reported to cost in excess of $550,000.

Teheran, Persia—The State Department, Government of Persia, has authorized a fund of about $400,000, for the construction of a paper mill, to be operated in conjunction with a Government printing plant, established about a year ago. The proposed mill will be equipped for the production of news print, book and writing papers. The American Consulate, Teheran, K. deG. MacVitty, consul, suggests that catalogs of American paper-making machinery be forwarded. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, D. C., Reference No. 206728.

New Companies

Detroit, Mich.—The Globe Paper Company has been incorporated with a capital of $100,000, to manufacture and deal in paper products. The incorporators are Joseph E. Johnston, John M. Goldsword and E. C. Goldsword, 10705 Pasadena Avenue, Detroit. The last noted is representative.

Baltimore, Md.—The Boone Folding Box Company has been incorporated with a capital of $25,000, to manufacture paper boxes and containers. Charles W. Boone, Third and Dillon streets, Baltimore, is the principal incorporator.

Bloomfield, N. J.—The Safety Paper Box Manufacturing Company has filed notice of organization to manufacture paper boxes and containers. The company is headed by Fred Capozzi, 9 Berkeley Avenue, Bloomfield.

Chicago, Ill.—The Quick Service Box Company, Inc., 2435 West Fourteenth street, has been incorporated with a capital of $50,000, to manufacture cardboard and other boxes and containers. The incorporators are D. M. Russell, Frederic Barth and Gerald E. Walsh.

Baltimore, Md.—The C. I. T. Corporation, Calvert Building, has been incorporated to manufacture and deal in paper specialties. The incorporators are R. Dorsey Watkins and Douglas H. Rose, 2d.

Detroit, Mich.—The Economy Paper and Bag Company has been incorporated with a capital of $10,000, to manufacture and deal in paper boxes, bags and kindred products. The incorporators are Carl E. Ackerman, Peter M. Naysmith and Albert M. Kuroz, 2539 West Euclid Avenue, Detroit. The last noted is representative.

Chicago, Ill.—The American Pulp Corporation, 38 South La Salle street, has been incorporated with a capital of $150,000, to manufacture and deal in pulp products. The incorporators are L. D. Anderson, J. J. Magner and D. T. Walton.

Spartanburg, S. C.—The Southeastern Paper Company has been incorporated with a capital of $25,000, to manufacture and deal in paper products. J. W. Dale, 318 South Converse Street, Spartanburg, is head.

New York, N. Y.—R. Siskin & Company, Inc., has been incorporated with a capital of $10,000, to deal in paper goods. The incorporators are D. Siskin, M. Kaminsky and B. Cohen. The company is represented by S. D. Spector, 305 Broadway, New York.

Wilmington, Del.—The Armor Envelope Company, care of the Corporation Guarantee & Trust Co., Land Title Building, Philadelphia, has been incorporated under state laws with capital of $100,000, to manufacture envelopes and other paper products.

New York, N. Y.—Bayer & Wodka, Inc., has been incorporated with a capital of 100 shares of stock, no par value, to manufacture and deal in paper products. The incorporators are R. Meisel, D. Horowitz and H. J. Manhein. The company is represented by M. Grouf, 1328 Broadway, New York, attorney.

Leominister, Mass.—Whitney & Company, Inc., has been incorporated with a capital of 1,000 shares of stock, no par value, to manufacture paper boxes, containers, etc. Walter F. Whitney is president, and Fred A. Whitney, 97 Merriam avenue, Leominster, treasurer and representative.

Brooklyn, N. Y.—The Liquori Paper Mills Supply Company has been incorporated with a capital of $10,000, to manufacture and deal in paper mill equipment and supplies. The incorporators are C. Liquori and J. Spinoso. The company is represented by C. J. Ryan, 215 Montague street, Brooklyn.

Chattanooga, Tenn.—The Weatherford Paper Company, 1146 Market street, has been incorporated with a capital of $25,000, to manufacture and deal in paper goods. W. H. Weatherford care of the Corporation Trust Company of America, du Pont is president.

Wilmington, Del.—The Maizewood Products Corporation, Wilmington, has been incorporated with a capital of $2,500,000, to manufacture sheathing papers, paperboard products and kindred specialties.

Paper Demand Improves in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 24, 1926.—The past week's survey shows a slight expansion in all branches of the paper industry here except the paper stock division. More seasonable weather and a slight pick up in industrial centers are held as the two most likely reasons. Indications point to May winding up with a fair record.

Business in the fine paper houses is all that can be desired, according to various officers who are well posted on general conditions. "Business in this particular section of the trade is as near normal as it has been for a long time. We have no complaint," said one manager. This particular house reports a record May in orders for its announcement and invitations department. This same house reports a heavy demand coming from all sides for greeting card stock.

Prices have not changed during the last week. One dealer made it plain that there was little, if any, expectation of any drastic price changes due.

He pointed out a somewhat different reason, yet a significant one, just why prices would remain as they are for some time. He declared that goods were selling all right but collections were very slow. He explained that such an unhealthy condition demanded that prices stay at a certain level until money and collections became a bit easier.

Activity in the coarse paper end of the business is on the upgrade. The demands are coming from various quarters and with general business reported as improved over April, wrappings are selling well. Manufacturing interests are in the market just now more actively than they have been for some time. This is the result of a general business stimulation which is noticeable in various sections of New England.

The raw stock men report business exceedingly dull and a visit to certain offices in the trade substantiates the statements. Orders are few and far between. Certain cheaper grades of stock appear to be at fairly low level but buyers do not make their appearances. One veteran salesman in the paper stock business said this week, "What's the use of going out on the road, spending a lot of expense money when there are no buyers. Might just as well sit right here in the office and be grateful for the few mail and telephone orders we get. The mills, generally, however, are reported running pretty nearly full time schedules.

The box board men report a fairly active May and the houses dealing in building papers and roofings, of course, are enjoying excellent business.

Forest Products Laboratory

Negotiations are under way for the erection of a new building for housing the work of the Cellulose Chemistry Department at McGill University, Montreal. The Government's Forest Products Laboratory and the Canadian Pulp and Paper Association are jointly interested in the project.

BLEACHED and UNBLEACHED
SULPHITES
KRAFT PULPS
GROUND WOOD
NORRONA
PULP STONES

PERKINS-GOODWIN CO.
33 WEST 42nd STREET
NEW YORK

PAPER
PRINTING PAPER
of
EVERY DESCRIPTION

Trade Marks Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade-mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, Barrister Bldg., Washington, D. C., trade-mark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

MOYEN-AGE—No. 175,643. Camille H. Boulin, New York City. For handmade paper.

VACUUM—No. 210,559. International Paper Company, New York City. For wrapping paper.

Z—No. 214,198. Zurcher Papierfabrik an der Sihl (Zurich Paper Mill on Shil), Zurich, Switzerland. For thin and thick drawing papers and tissue paper.

FOUNTAIN PEN VELLUM—No. 227,378. Wesley & Winter, Inc., Newark, N. J. For writing paper and mailing envelopes.

MILPACO—No. 228,924. Michael Milton, New York City. For ledger paper, mimeograph paper, cards, bristol board, and cardboard.

FROSTONE—No. 228,995. McLaurin-Jones Company, Brookfield, Mass. For coated papers.

PREMIER BRAND—No. 219,456. Hooper Paper and Twine Company, Inc., Philadelphia, Pa. For wrapping papers, tissue paper, toilet paper, paper towels, sealing paper tape, blotters, envelopes, adding machine paper, paper napkins, wax paper, and pattern paper.

RELPAK KRAFT—No. 220,421. Reliance Paper and Twine Mills, New York City. For wrapping paper.

ALL-IN-ONE—No. 223,016. Alfred George Blunden, London, England. For account books.

QUALITON—No. 223,448. Morris Piltzer, Los Angeles, Cal. For paper and stationery, desk pads, desk files, and flat desk memorandum files, and combined desk pads and files.

SEAMAN PAPER COMPANY—No. 225,143. Seaman Paper Company, Chicago, Ill. For enamel book paper.

SEAMAN PAPER COMPANY—No. 225,144. Seaman Paper Company, Chicago. For printing paper.

FOUNTAIN PEN VELLUM—No. 227,377. Wesley & Winter, Inc., Newark, N. J. For writing paper and mailing envelopes.

NORTHWEST—No. 228,129. The Northwest Paper Company, Cloquet, Minn. For book paper, writing paper, and printing paper.

WAVELAND BOND—No. 228,133. E. C. Palmer & Co., Ltd., New Orleans, La. For bond paper.

WHALEHIDE—No. 228,193. Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich. For wrapping paper.

ROYTYPE—No. 228,666. Royal Typewriter Company, Inc., New York City. For inking ribbons and carbon paper.

Grays Harbor Paper Mill Assured

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., May 21, 1926.—The Grays Harbor Pulp and Paper Mill is practically assured, according to a statement from the Aberdeen Chamber of Commerce in Aberdeen, Washington. W. E. Johnson of Wisconsin Rapids, Wis., who is a moving agent in the new project, has been to the Eastern coast conferring with financial interests regarding the establishment of this project. Mr. Johnson is expected to work with H. O. Hanke, head of a plant at Wisconsin Rapids, in developing the new mill. The latter recently visited the proposed site on Grays Harbor, accompanied by L. A. DeGuere, experienced pulp engineer. At that time the men expressed the opinion that the site was an ideal location.

A large part of the $750,000 for the construction of the proposed mill has been raised and with the money probably coming from Eastern capitalists it is expected that work can begin this summer on the new plant. A first unit would be started with ample space left for expansion as rapidly as the market justified.

Obituary

David V. B. Smart

TROY, N. Y., May 24, 1926.—David V. B. Smart, 85 years old and for many years a widely known paper manufacturer in this city, died suddenly here Thursday. Stricken as he was about to enter the home of his daughter, he died soon after, the cause of death being given as heart trouble. Mr. Smart was born at Brooklyn in 1841 and cam to Troy in 1866. His father, the late Robert W. Smart, established the Smart Paper Company about 60 years ago and this industry was regarded for years as one of the best in the city.

After completing his schooling David became associated with his father in the conduct of the business and for years made a study of paper manufacturing. Upon the death of his father he became head of the Smart Paper Company and under his management the business thrived. The deceased was connected with the paper manufacturing industry for more than 50 years and during that time became widely known among pulp and paper manufacturers. At the time of his retirement from active business a number of years ago he was interested in a number of important industrial enterprises in the Upper Hudson Valley.

Mr. Smart was active in the civic life of Troy for years and was one of the few surviving charter members of Memorial Presbyterian Church. The survivors are one daughter and a son, James N. Smart.

Patrick Redmond

KALAMAZOO, Mich, May 24, 1926.—Patrick Redmond, 84, for sixty years a resident of Kalamazoo, died at 10:30 Friday evening at his home in Cork street. He was a victim of old age.

Mr. Redmond was a native of Kildare, Ireland, and came to this country when nine years of age. In 1865 he came to Kalamazoo and with the organization of the Kalamazoo Paper Company took a position in that mill. The Redmond family has become famous in the paper industry in this valley and has been written up in nearly all the representative paper trade journals. The Redmond boys as a rule took to the paper industry. All learned the trade from the start and through real industry and worth rose to positions of responsibility.

Ten children were born to the Redmond family, eight of whom survive. One son, Charles F. Redmond, millwright at the Kalamazoo Paper Company, died less than a week ago. The surviving children are two daughters, Mrs. Frank J. Pickett and Mrs. Alfred J. Pickett, of Kalamazoo and six sons, Michael, William, Patrick J. and David of this city; John of Detroit and Cornelius F. of Los Angeles. Fifteen grand children are living.

For years Mr. Redmond was a member of St. Augustine's parish and the Holy Name society of that church. During late years he has been associated with St. Joseph's church.

Mrs. R. S. Kellogg

Mrs. Clara Kellogg, wife of R. S. Kellogg, secretary of the News Print Service Bureau, 342 Madison Avenue, New York, died at her home, 31 Bayley street, Yonkers, last Sunday, aged 48. The funeral was held at Wausau, Wis., from Judge A. H. Reid's residence, where services were held. Mr. Kellogg and his family have the deepest sympathy of their large circle of friends in the paper industry.

Steam Economy

A new pamphlet that gives in concise form the value of measuring instruments in the production and distribution of steam has been issued by Republic Flow Meters Company, Chicago, entitled "Steam Economy."

In it the representative plant described in the paper industry is Marathon Paper Mills Company, Rothschild, Wis., the author of the article being John Wiener, master mechanic.

Before The Winter Months Return Again —

INVESTIGATE THE

Briner Economizer

LICENSED UNDER PATENTS OF E·A·BRINER AND JOHN E·ALEXANDER

Machine rooms heated with heat of the vapor formerly wasted to the atmosphere.

A Briner Economizer is not an expense but is a sound investment for the mill seeking to cut production costs.

Now is the time to learn how Briner Economizers are solving mill problems similar to your own. Don't wait until we are booked to capacity for next winter installations.

Write to our office nearest you for complete data and list of installations. No obligation of course—but Write NOW!

J. O. ROSS ENGINEERING CORPORATION

30 East 42nd Street, New York

549 W. Washington Blvd.
Chicago, Ill.

1117 Tacoma Ave.,
Tacoma, Wash.

79 Milk St.,
Boston, Mass.

ROSS ENGINEERING OF CANADA, LIMITED

New Birks Bldg., Montreal, Quebec

ROSS SYSTEMS

HEATING - VENTILATING - DRYING

— Making Paper Production Profitable —

New York Trade Jottings

C. C. Hockley, consulting engineer, of Portland, Ore., formerly chief engineer of the Thilmany Pulp and Paper Company, Kaukauna, Wis., is a New York visitor this week.

* * *

Wilbur P. Richardson, who was formerly connected with Procter & Gamble, of Cincinnati, Ohio, in the distribution of cotton linter pulp, has become associated with Sanderson & Porter, engineers and contractors, 52 William street, New York.

* * *

Major and Mrs. Warren B. Bullock, and their daughter Catherine, sailed for Hamburg, Germany, last Thursday, aboard the *S. S. Thuringia*. Major Bullock plans to spend six weeks in Germany and Scandinavia.

* * *

J. P. Heilbronn, president of the J. P. Heilbronn Company, of Manila, P. I., large jobbers of paper and printer's supplies in the Philippine Islands, is at present visiting his New York offices, 233 Broadway, for a short stay.

* * *

Henry W. Stokes, president of the York Haven Paper Company, of Philadelphia, and past president of the American Paper and Pulp Association, was in New York recently on business and in connection with association activities.

* * *

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, attended a committee meeting at Wausau, Wis., on Monday, and meetings of the National Gummed Tape Manufacturers Association in Chicago, on May 25 and 26.

* * *

M. C. Parsons, president of the Parsons Trading Company, of 110 East 42nd street, New York, and Mrs. Parsons, are scheduled to sail aboard the Cunard liner *Franconia* on Saturday, May 29, for England, where they intend to spend five months motoring in their car which they sent forward last Saturday.

* * *

At the last meeting of the Kalbfleish Corporation, of 200 Fifth Avenue, New York, the Board of Directors announced the following addition to its Executive Staff: P. M. Dinkins, vice-president; J. F. Fredriksson, vice-president, and W. H. Neidhardt, assistant treasurer.

* * *

Edward Wright, who for the past nine years has been manager of the *New York World* interests in the United States and Canada, has resigned this post and has accepted the position of vice-president and manager of the Malone Light and Power Company, which is one of the Carlisle interests. He is to enter upon his new duties on June 1.

* * *

Several prominent paper manufacturers, including George W. Sisson, Jr., Racquette River Paper Company; Grellet Collins, Dill and Collins Company; E. H. Burton, A. P. W. Paper Company; Martin Cantine Company and others, were in New York on May 20 for attendance at the annual meeting and dinner of the National Industrial Conference Board.

* * *

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, and a member of the Board of Directors of the Swedish Chamber of Commerce of the United States, has received an invitation from the John Ericsson Memorial Commission to be present at the cermony attending the Dedication of the Memorial to John Ericsson, to be held at West Potomac Park, Washington, D. C., on May 29.

* * *

The regular luncheon meeting of the Salesmens' Association of the Paper Industry was held last Monday, at the Town Hall Club, New York. Secretary D. A. Crocker, who is also the forester of the American Paper and Pulp Association, was present, having arrived in New York on a flying visit from the South, where he will return in a few days to continue the survey of Virginia on which he is engaged.

* * *

J. P. Hummel, of the Ross-Hummel Fibre Corporation, of Hopewell, Va., sailed from New York recently for a two months tour of Central and Northern Europe. He was accompanied by his wife. It is their plan to join Major O. M. Porter, of the American Paper and Pulp Association, and Mrs. Porter, at Oslo, Norway, on May 30, after which Mr. Hummel and Major Porter will visit a number of pulp and paper mills in Norway, Sweden and Finland.

* * *

R. S. Hatch, of Dayton, Ohio, formerly connected with the Mead Pulp and Paper Company, was a New York visitor last week. During the past year Mr. Hatch has acted as consultant for a number of paper companies in the solution of manufacturing problems and the development of new grades of paper. His training as a paper chemist and his long and successful experience as a paper mill superintendent in all grades of paper, has made him particularly well qualified for this work.

* * *

Col. Philip K. Fletcher, of the Fletcher Paper Company, Alpena, Mich., has been designated by Norman W. Wilson, President of the American Paper and Pulp Association, to represent the paper industry in connection with cooperation between the War Department and the industries of the country in plans being worked out by Col. H. Macnider, the Assistant Secretary of War, for peace time mobilization of material and industrial organizations under the National Defense Act. Colonel Fletcher received his commission as captain at the close of the First Officers Training Camp at Fort Sheridan, Ill., and made a very excellent record as an instructor during the Second Officers Training Camp at the same station. He served throughout the war in the infantry and motor transport service.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 26, 1926.—The Government Printing Office has received the following bids for 5,000 sheets Red Railroad Board, 22 x 28: Old Dominion Paper Company, $29.98 per thousand sheets; Barton, Duer & Koch Paper Company, $25.85; Maurice O'Meara Company, $40.00; Holyoke Card and Paper Company, $36.50; R. P. Andrews Paper Company, $37.45; Mathers-Lamm Paper Company, $37.45; Dobler & Mudge, $24.44; and Lindemeyr & Harker, $37.62.

The Government Printing Office has received the following bids for 1,000 sheets Gray Molton Board, 22 x 28: Holyoke Card & Paper Company, $68.50; Dobler & Mudge, $80.00; Old Dominion Paper Company, $94.48; R. P. Andrews Paper Company, $73.50; National Card Mat and Board Company, $90.00; and Hurlock Brothers Company, Inc., $105.00 f. o. b. Philadelphia.

The Mathers-Lamm Paper Company has been awarded the contract for furnishing the Government Printing Office with 266 pounds (2,000 sheets) of 19 x 28 Quaker drab cloth lined cover at 13 cents per pound, bids for which were received on May 10.

The Davey Company has been awarded the contract for furnishing the Government Printing Office with 36,000 pounds (21,600 sheets) of 25 x 30, No. 2 quality binders board at 3.4 cents per pound, bids for which were received on May 10.

Pacific Straw Board Co. Ships Board

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., May 21, 1926.—The Pacific Straw Board and Paper Company, Longview, Wash., which recently started operations at its plant on the Cowlitz River, has shipped two carloads of box board to California by the steamship Silverado. Other shipments will go forward during the month for southern points.

EXPERIMENTATION

Is the forerunner of Progress.

Our experimental Paper machines have played a prominent part in the industry's research work.

May we tell you about the two experimental machines now building.

Ask Us

The Pusey and Jones Company

Wilmington, Delaware

H. G. Rodefer Returns From Maine

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, O., May 24, 1926.—H. G. Rodefer and family returned today from Howland, Me., and plan to make their home in this city after four years spent in the East where Mr. Rodefer was identified with the Advance Bag and Paper Company.

For some time Mr. Rodefer had been in ill-health and this prompted his resignation and his decision to return to the Miami Valley.

The departure of the popular paper bag man from Howland was the signal for a farewell party, which was attended by 300 persons including employes of the Advance Bag and Paper Company and townspeople of Howland.

Miami Valley friends have received copies of the Bangor, Me., *Daily News*, containing an account of the reception. In part the article states:—"Never since the coming and going of the many men who have been in this mill, has anything like this party been given. The entire affair was arranged by the employees who have worked under Mr. Rodefer so long, and seldom has a more enjoyable event been held."

The article described the crowd and the dance that followed, led by Mr. and Mrs. Rodefer, music having been furnished by an orchestra from the bag mill.

A beautiful traveling bag was presented to Mr. Rodefer by his associates, Galen Ewett having made the presentation speech. In responding, Mr. Rodefer expressed his deep appreciation of the gift and of his regret in leaving Howland. Refreshments were served and when the social festivities came to a close adieu was bid to each person individually, Mr. Rodefer shaking hands with all.

The Bangor News stated:—"The family came to Howland from Middletown, Ohio, four years ago and in that time have made many friends who very much regret their departure. They leave with the very best wishes from the townspeople, and the hope that with restored health, they may at some future time return to us."

Champion Coated Paper Co. Entertains

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, O., May 25, 1926.—The Champion Coated Paper Company, of Hamilton, entertained last week a train load of the "most prominent" visitors who have come to the Miami Valley on one of the country's finest trains, the National Limited, of the Baltimore & Ohio railroad, when 125 printers and buyers of print paper visited the Champion mills the past week.

Their visit was made the occasion of celebration at the mills, where every convenience and comfort were accorded during the day's stay. The train, which is acknowledged to be one of the best-appointed in the country, is equipped with shower baths, valet service, secretarial service and tonsorial service for the passengers.

Among the guests were paper men from Philadelphia, Washington and Baltimore. The visitors arrived at 9 A. M. and were immediately taken on a trip of inspection through the coated mills. Officials of the concern escorted the group through the plant and explained the details of manufacture.

At noon the visitors had luncheon at the new Cafeteria of the mills after which the final inspection of the mills followed.

The guests were taken in busses to the Butler Country Club for dinner. The dinner was an elaborate affair and was featured by brief addresses and a special entertainment provided by the Williamson Bureau of Cincinnati.

Following dinner and two hours of entertainment the printers and dealers were taken by busses to their waiting train in the B. and O. yards, departure having been made at 11 o'clock for Washington.

Many of those who made the trip declared it to have been the most interesting, instructive and entertaining day they had passed for a long time and hoped they could make the journey again in the not-distant future.

The Champion Coated Paper Company has entertained a number of its friends in this manner in the past, believing the plan to be satisfactory and pleasurable to all concerned.

Minor W. Beckett for Stream Purification

DAYTON, O., May 24, 1926.—Minor W. Beckett, president of the Beckett Paper Company, Hamilton, has been appointed a member of the national committee in relation to the purification of streams, by Norman V. Wilson, president of the American Pulp and Paper Association.

This organization, rather than being hostile to the purification of waterways as some persons believe, is in actual sympathy with the movement to cities and states to free the rivers and creeks of refuse matter.

The officers of the American Paper and Pulp Association point out that there is in reality considerable waste in paper mills in the refuse matter they run into the streams and that economics can be effected to the financial benefit of the mills and the purification of the streams at the same time.

Mr. Beckett stated this week that paper mill owners are studying the problem and are anxious to co-operate in the idea of river beautification and purification.

The Miami Valley has had several instances of stream pollution and everything is being done in the way of installing modern machinery to prevent pollution of rivers.

Miss Edith Beckett, daughter of Mrs. Thomas Beckett, widow of the late paper manufacturer of Hamilton, was chairman of the committee on all festivities at Wellesley College, Wellesley, Mass., friends have been advised.

The entire program came under the supervision of Miss Beckett. The celebration continued from early morn until dusk and was featured by the crowning of the May Queen.

Much of the success of the affair was credited to the efficient supervision given by Miss Beckett.

Paper Trade Golf Tournament

The annual spring tournament of the New York Paper Trade Golf Association was held at the Baltusrol Golf Club, Short Hills, N. J., on May 18 and 19, with the following result:

Low Gross, Qualifying round, Steven Berrien, 80.

Kicker's Handicap, H. S. Chalfant.

First Eight, C. R. McMillen beat H. F. Bigelow, 5 and 4.

Second Eight, Alex Gilman beat H. A. Earle, 1 up.

Third Eight, E. W. Fry beat H. Starr, 4 and 3.

Fourth Eight, E. T. Gardner beat S. C. Wilson, 2 and 1.

Fifth Eight, K. S. Warner beat A. C. Scrimgeour, 9 and 7.

Sixth Eight, J. J. Cillon beat Ross McCandless, 1 up, 19 holes.

First Flight, beaten 4, S. Berrien beat Anders, 2 and 1.

Second Flight, beaten 4, C. L. Voorhees beat Hopkins, 1 up.

Third Flight, beaten 4, W. Holden tied with A. B. Sherrill, 24 holes.

Fourth Flight, beaten 4, A. G. Nelson beat B. C. Hill, 1 up, 19 holes.

Fifth Flight, beaten 4, C. T. Rue beat Matthews, 7 and 6.

Sixth Flight, P. B. Hogote and W. T. Wilson were all even at the 19th hole.

Winner of 36 hole medal play handicap Wednesday May 19, C. R. McMillen. Score, 82—6=76; 75—6=69; Total, 145.

Winner of Luke Trophy—Two best complete rounds of 18 holes medal play handicap, Steve Berrien. Score, 80—4=76; 73—4=69; Total 145.

C. E. Mack Leaves Mack-Elliott Paper Co.

ST. LOUIS, MO., May 24, 1926.—Charles E. Mack associated with the Mack-Elliott Paper Company since 1910 as its president, has resigned.

The officers of the company now are as follows:—Charles S. Elliott, president; Charles M. Bleke, vice president and treasurer and George B. Mueller, Second vice president and secretary.

Again we ask:

Will it pay you to install a Voith Refiner?

This is how one user of the machine, who has had it in operation for quite some years, expresses himself:

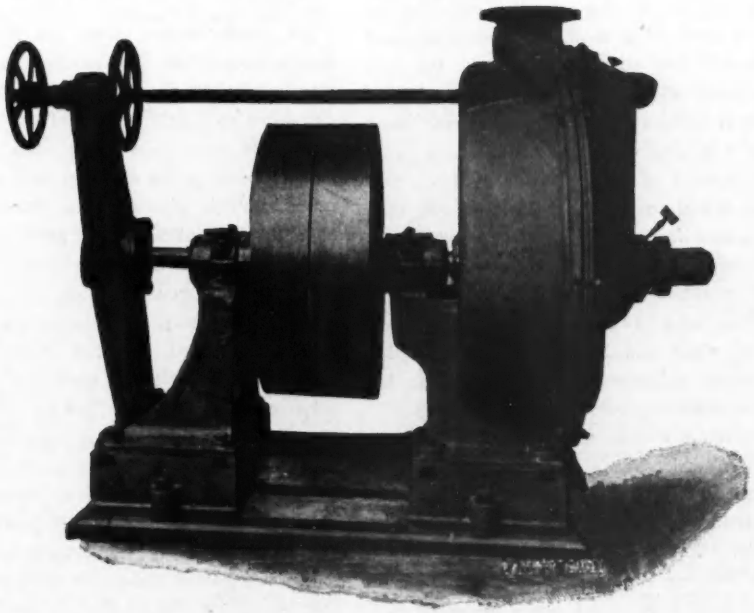
"In 1910 we had an average yield of 1946 lbs. to the cord.

"In 1915 we obtained an average yield of 2,361 lbs. per cord.

"THIS SAVING WAS DUE PRINCIPALLY TO THE USE OF THE VOITH REFINER".

While we cannot guarantee an equally good showing in every case, this depending upon the percentage of tailings produced, we can promise a substantial increase in yield through the installation of a

Voith Refiner



American Voith Contact Company, Inc.

280 MADISON AVE. **NEW YORK, N. Y.**

PAPER TRADE JOURNAL
ESTABLISHED 1872
With Which Is Combined
PAPER
The Magazine of the Paper Industry
HENRY J. BERGER, Editor
Member A. B. C. Audit Bureau of Circulations
Vol. LXXXII New York, May 27, 1926 No. 21

AN ACTIVE YEAR IN PAPER

All the indications are for an unusually active year in the paper industry. Judging from present prospects the record of 1925, which was the most active year in the industry since 1920, will almost certainly be considerably bettered.

In news print the production in 1925 in the United States and Canada totalled 3,052,000 tons, of which sum 1,530,000 were made in the former and 1,522,000 tons in the latter country.

During the latter months of 1925 the Canadian mills for the first time exceeded the production in the United States and from now on Canada will increasingly continue in the lead. During the first three months of 1926 the mills in the United States made 12 per cent more news print than in the same period in 1925 and the Canadian mills made 18 per cent more than in the first three months of 1925. During 1925 ten new Fourdrinier news print machines with a capacity of 890 tons were started in Canada and if present plans are carried out, 18 new Fourdrinier news print machines with a capacity of 1,715 tons will be placed in operation during the current year.

The production of book paper has been constantly increasing. During 1925 there were eight new book paper machines installed, with an estimated capacity of about 325 tons for twenty-four hours. The market seems to have taken up this increase in a fairly satisfactory manner. The normal annual production of book paper, which takes in various grades that are usually manufactured by book mills and therefore classified under the book paper industry is about 5,000 tons per day, or 1,550,000 tons annually. The production during 1925 was something over 90 per cent, or about 1,400,000 tons.

The expansion in the book paper trade, for a period of two and one half years, has been very large. By June, 1926, there will have been installed in this period, eighteen new machines, with capacity of 840 tons daily or 250,000 tons annually, which will mean an increased production of about 20 per cent over the production of 1923.

The production of wrapping paper during 1925 was greater than during any corresponding period and the shipments were also greater; stocks on hand at the end of the year were lower by far than at the end of the previous year. As a matter of production and consumption it was the greatest in the history of the country, yet it was not altogether satisfactory from the standpoint of profit. With the possible increase in use for new products there seems to be a chance for a slightly better year in 1926. The amount of tonnage now being placed is indicative of an increased consumption over 1925, and this will help much in correcting the bad conditions of the last year.

Over-production in paper boards made last year less satisfactory than would have been the case otherwise, but conditions generally in this branch of the industry are improving and a more satisfactory year this year is expected.

As indicating the confidence of paper manufacturers for an increasing demand, it may be mentioned that they have been, since the first of the year, placing orders for Scandinavian pulp for 1927.

Paper manufacturers have been for several years past placing their houses in order and in spite of rather keen competition in practically all branches of the industry, the current year cannot fail to be quite prosperous.

FOREST CONSERVATION BY PAPER MILLS

Forests should be conserved along lines which have been definitely planned. In North Carolina at Canton the Champion Fibre Company has developed and is carrying out an interesting program along those lines.

The organization owns thousands of acres of forest and this includes every timber type in the Southern Appalachian region.

To prevent waste efforts are directed toward reducing the heights of stumps to a minimum and cutting as far into the tops of trees as possible. In the mill the period of storage is cut down so that rotting will not set in.

The fire prevention organization consists of five patrolmen and as many patrol districts, each patrolman living at a point central to his district. For fire fighters patrolmen depend upon the general public but more particularly upon those who have contracts with the company either as tenants or lessees. Every contract conveying any privileges upon company lands contains a clause providing that the holder of the contract and his family shall assist in fire prevention and suppression.

A forestry educational campaign is being conducted for the purpose of getting the interest of the public aroused in a more general application of the science of forestry as well as to secure their cooperation in helping accomplish the aims of the company. Production of future crops of timber will accrue to the benefit of all and should be generally encouraged. This can be brought about by proper forestry legislation and appropriations for governmental forestry activities; by legislation designed to reduce the tax on timberlands held for future crops during the growth of such crops to maturity; by appropriations to extend the State forest fire protective system.

The most impressive feature of the company forestry activities is the growing in nurseries of trees from seed. This is being done principally to provide stock for the planting of such areas within Champion forests which have been denuded of natural reproduction by one agency or another. It stimu-

lates, as well, a local interest in planting idle, barren lands which are unsuited for agriculture. It is contemplated that the company nurseries shall eventually produce a large enough surplus of trees over their own needs so that farmers and others in western North Carolina may be supplied planting stock at cost.

At Willits, N. C., sufficient ground has been prepared for the germinating of two million trees next spring. The main nursery will be at this point. The area has a background of more than four thousand acres of mountain land once cut-over and owned by the company which are being retained for a second crop.

Strengthening Our Forest Reserves

The continually expanding consumption of various commodities imposes on industries the necessity of supplying the increasing requirements promptly and in sufficient quantities, says an editorial in the current issue of *International Paper Monthly*. This in turn involves from time to time the extension of existing plants and the construction of new ones. Plant expansion calls for the solution of many problems, chiefly the acquisition of additional supplies of raw material, which, in the pulp and paper industry, is wood.

With a view to strengthening its forest reserves, the Company has recently acquired the Ste. Anne des Monts timberlands to which reference was made in the May issue of *International Paper Monthly*.

The Company also has just acquired approximately 2,000 square miles of Crown timber limits on the Upper Ottawa and Gatineau Rivers in the Province of Quebec. Because of its location and stand of timber this purchase is of peculiar value to the Company and will permit the enlargement as market conditions require of both the Kipawa and Gatineau Mills, as well as reinforce the available supply for the news print mill which the company contemplates building on the Quinze (Upper Ottawa) River some time during the next four years.

These acquisitions of timber limits reflect a policy of balancing of mill construction with adequate timber reserves so that the Company's mill properties will be assured of permanence. The opposite policy of building or expanding mills beyond the capacity which their timber reserves justify has in the past been productive of serious injury not only to the industry but also to the communities in which it is located.

The protection of forest resources against fire is of growing importance. Cutting of timber for pulp and paper mills where the tributary woodlands are adequate in size presents only operating problems, as growth should equal or exceed the quantity of timber cut annually. The real problem is that of protection against loss from forest fires.

The International Paper Company is co-operating with governmental authorities and private associations in the matter of fire protection for its timberlands, and is engaged in much pioneer work on its own initiative. The Company looks forward to a time when forest fires will be reduced to a minimum.

To Start Algonquin Sulphite Mill in Fall

The Algonquin Paper Corporation, which is building a new sulphite pulp mill at Ogdensburg, expect to be able to start up same early this autumn, and produce higher quality sulphite pulp for newspaper and obtain higher yield than has previously been possible. The plant has been designed and is being built by the Stebbins Engineering and Manufacturing Company, of Watertown, N. Y., and is laid out on quite different lines than hitherto has been usual. Most of the machinery required for obtaining results as indicated have been ordered from G. L. M. Hellstrom of Montreal, who represents the most up-to-date and largest Scandinavian works and engineering firms on this continent.

W. D. Hopkins With Blake, Moffitt & Towne

SAN FRANCISCO, Cal., May 14, 1926.—An announcement of unusual interest was recently made that W. D. Hopkinson had joined the Blake, Moffit & Towne organization to have general supervision over the sales of the San Francisco Division which includes the Sacramento, Fresno and Santa Rosa territories.

Mr. Hopkinson has long and favorably been known to the printing and advertising people of the Pacific Coast where he has been engaged in the sale of paper for thirty years. Most of this time he has occupied executive positions of directing sales and promotional activities.

No other changes in the Blake, Moffitt & Towne organization are contemplated. Mr. Hopkinson's work will carry him into close cooperation with Frank L. Lange, manager of the Fine Paper Department and Frank L. Unthank, manager of the Coarse Paper Department in carrying forward a progressive program already planned.

The appointment of Mr. Hopkinson is the most recent of a series of announcements in the expansion program of Blake, Moffitt & Towne. Two years ago the Sacramento Division was opened with E. W. Benson its manager. Rapid strides have been made in this territory and the present warehouse on Front street is already inadequate for the business being done. Plans are under way for the construction of new and thoroughly up to date offices and warehouses, to be erected on Front street in the heart of the wholesale district.

Recently the Los Angeles Division of Blake, Moffitt & Towne opened a large and most modern warehouse containing all the latest service facilities including a loading arcade large enough to accommodate the loading of twenty trucks at one time.

In addition to the San Francisco, Los Angeles and Sacramento Divisions distributing branches are maintained at San Diego, Phoenix, Arizona, Fresno and Santa Rosa while outside of California, the affiliated companies of Blake, McFall Company, at Portland and Tacoma Paper and Stationery Company at Tacoma cover the Oregon and Western Washington territories and offices are maintained in New York for the purpose of contacting with the mills.

Start Construction on Dublin Pulp Mill

DUBLIN, Ga., May 21, 1926.—Actual construction work has begun on the million dollar pulp and naval stores plant of the Southern Pulp and Naval Stores company, which has located here, and will build a mill to use pine stumps.

From these stumps there will be taken pulp for kraft paper, and naval stores products, which include rosin and turpentine as well as pine oil.

This plant is considered one of the largest industrial outfits in Georgia. It will consist of a complete pulp mill and in connection the necessary plant to reclaim the naval stores byproducts from the pulpwood. For nearly two years now the company has been in the process of organization and the point has been reached where the company can begin actual construction.

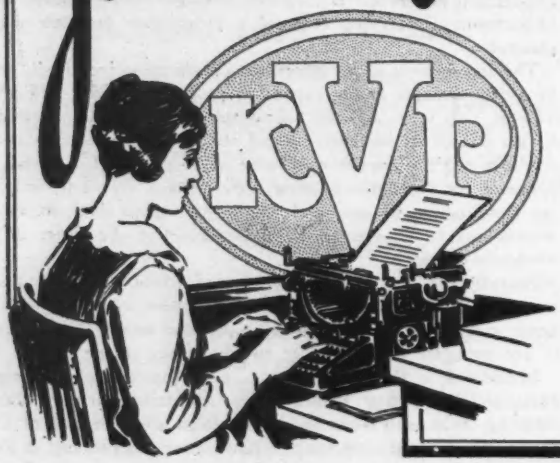
Something like $100,000 worth of pulp mill machinery is now on the ground and a complete steel building for holding a pulp unit also will be erected.

To this end Dublin has contributed a site for the mill on the Oconee river just outside of the city limits. Contracts for the stumps from 175,000 acres of land in this county have been secured by the local Chamber of Commerce. Citizens of Dublin have purchased stock in the new organization.

St. Helen's Paper Co. Machinery Arriving

PORTLAND, Ore., May 21, 1926.—The first shipment of equipment for the St. Helen's Pulp and Paper Company which is building a plant at St. Helens, Ore., arrived the middle of May. Max Oberdorfer, general manager of the new mill, states that installation will start at once. This first shipment includes for the most part machinery for the chemical plant.

Uncle Jake says



The salesman may be smarter than his prospect, but he makes a mistake when he calls his attention to the fact.

The only "smart" thing about a letter should be the paper on which it is written.

You know how some people strike you as always being well groomed—well, that is just the way a letter written on K. V. P. Bond strikes the party receiving it. Always the same, always distinctive, always classy.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

LaMotte

H-Ion Roulette Comparator

The Comparator "De Luxe."
Patent Applied For

This set was developed in our own laboratories, to fill the need expressed by many sugar manufacturers and refiners for a portable set, covering an extended range, which would give the maximum of simplicity, accuracy and speed, in making Hydrogen Ion determinations. These requirements are fulfilled in our Roulette Comparator.

The Color Standards, covering the ranges of any three indicators, such as Bromcresol Purple, Bromthymol Blue and Phenol Red, are placed in the revolving drum, the Color Standards alternating with ampoules of distilled water.

The material to be tested is placed in the three test tubes, shown in the block on the front of the set, and measurements made in the usual manner, revolving the drum until a match with the standards is obtained. The pH value is then read off directly.

Set complete with 40 watt Mazda lamp, ground glass and Daylite screen, 3 sets of Color Standards, 27 ampoules of distilled water; together with 3 bottles of indicator solution, 3-0.5 ml. pipettes, and 18 graduated test tubes in a separate case, f. o. b. Baltimore, Md. **$75.00**

LaMotte Chemical Products Company

McCormick Building **Baltimore, Maryland, U.S.A.**

Section of the
Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

Improving Fastness to Light of Dyes When Applied on Paper*

By A. Beyer

Investigators are daily making use of photo-chemical reactions. Syntheses and decompositions which cannot be accomplished by the usual methods are brought about by the energy of light waves, and we are gradually coming to understand and classify the laws which govern these reactions.

The most generally observed photo-chemical effect is undoubtedly the fading of colors. The sun's heat and light bring forth the innumerable and wonderful colors with which nature is adorned, and these same rays fade and destroy the synthetic colors elaborated by the intelligence of man. It is to this too-often observed phenomenon that colorists are trying to apply the findings of modern science, and I merely propose to explain to the best of my ability the problem of the fastness or resistance of artificial dyestuffs to the action of the sun's rays. In order to do this, I shall reply to the three questions which sum it up:

(1) What is meant by fastness to light?

(2) How is the action of light explained?

(3) How can the action of light on dyes be diminished, or in other words, how can the fastness of a color be increased?

Naturally, we are most interested in the answer to the last question; but it is necessary to explain the first two also in order to make a complete survey of the problem before trying to cure, we must diagnose the disease, define its aspects and find its causes.

What Is Meant by Fastness to Light?

In practice, a dye is fast to light when it undergoes but slight change after even a prolonged exposure. The change can affect either the tone or the depth of the shade, or both. It is determined by comparative exposure to sunlight of a set of standard colors belonging to all the different groups of dyes, and a given shade is judged to be more or less fast than corresponding standard colors exposed under the same conditions and on the same support.

The degree of fastness thus obtained is therefore relative, and should never be expressed without stating the standards used and the conditions under which the comparison was carried out. For the "fastness" depends on a large number of factors, the most important of which are:

The constitution of the dye;

The nature of the fibers, base or loading;

The dyeing process;

The fixing or mordanting of the dye;

The method and length of time or exposure (source or light);

The temperature.

It is important to mention whether the color was exposed in a free atmosphere or under glass, in the spring, summer, autumn or winter in the open country or at the mill, in bright or cloudy weather, etc. And even when all these various factors are taken into consideration it is impossible to assign absolute values for fastness, and the tables given in some text books in which the fastness is expressed numerically from (1) to (5) or from (1) to (8) are more or less arbitrary or empirical, and at times interested.

The use to which the paper is to be put determines the method of dyeing and the conditions of the fastness test, and judgment as to fastness should be based on a practical comparison carried out under conditions which are governed by the requirements of the paper. The color requirements for a wall paper or a cover paper, for instance, will be more exacting than for wrapping paper, and a dye which would be entirely unsuitable for the former might be perfectly satisfactory for the latter.

It is not possible to draw a sharp line between "fast" dyes and "non-fast" dyes. This rough and primitive method of classifying dyes is now antiquated. It persists in mills which use but one process of dyeing; but the relativeness of the degree of fastness is easily seen on testing the shades obtained with a given dye applied to the same stock in different ways.

Malachite green, for example, exhibits all possible degrees of fastness, from practically perfect resistance to light down to extreme fugaciousness. This is very cleanly shown by the graphs, on the following page, prepared from the results obtained by Gebhardt.

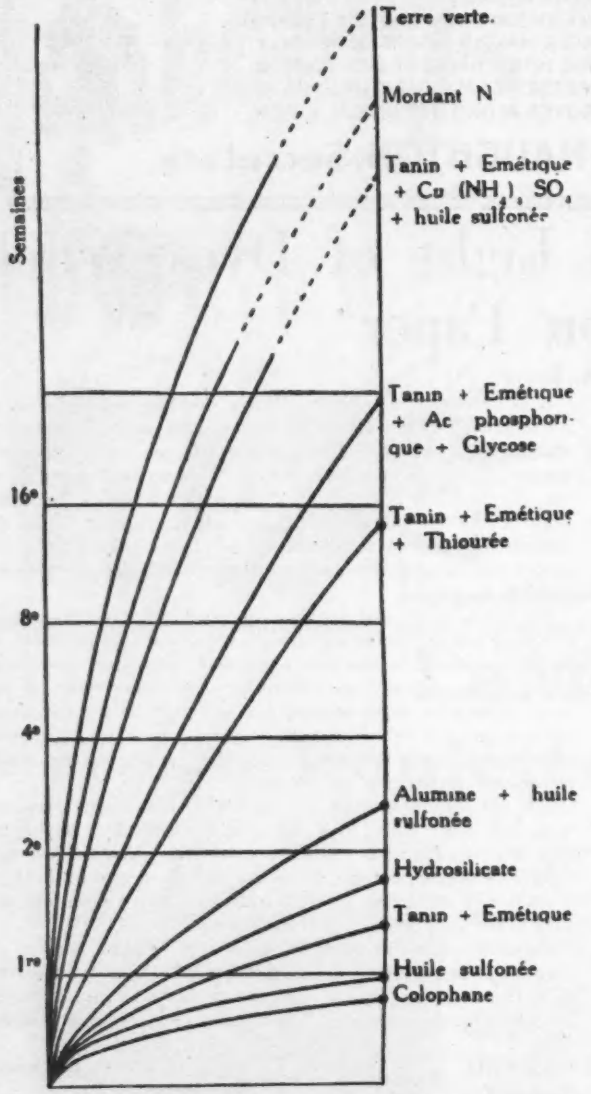
Terre Verte	Hydrated Copper Carbonate
Mordant N	N Mordant
Tanin+Emétique+Cu$(NH_4)_4$ SO_4+Huile Sulfonée	Tannin+Tartar Emetic+Cu $(NH_4)_4SO_4$ + Sulphonated Oil
Tanin+Emétique+Ac. Phosphorique+Glycose	Tannin + Tartar Emetiic + Phosphoric Acid + Glucose
Tanin+Emétique+Thiourée	Tannin + Tartar Emetic + Thiourea
Alumine+Huile Sulfonée	Alumina+Sulphonated Oil
Hydrosilicate	Hydrated Silicate
Tanin+Emétique	Tannin+Tartar Emetic
Huile Sulfonée	Sulphonated Oil
Colophane	Rosin.

Ten samples dyed with Malachite Green N. B. which had been fixed to the fiber in a different manner in each case, were exposed

*Translated from *Le Papier* XXIX, 307-319, March 1926, by A. Papineau-Couture.

from February 15th to June 15th. The curves show the rate of fading in each case. The differences, as can be seen are very great, the first samples being completely faded in less than two weeks, while the others last for two, three and four months, and even more. Numerous similar examples could be found, and I shall have occasion to discuss more at length, further on, the effects of subsequent treatment.

I may also mention another example to which I shall have occasion to refer again, namely, the difference in fastness to light of the same dyes when in solution and when in the form of a lake. Sodium alizarate solution, for instance, fades very rapidly, while a lake of alizarin on alumina is one of the very fastest shades known.



Naphthol Yellow N. S., when dyed on wool or silk fades rapidly, while in aqueous solution or when dyed on paper it is much faster. Other dyes exhibit contrary properties.

These observations lead us to the following deduction, which may appear paradoxical, but is true none the less: the degree of light fastness of a dye is not immutable; all dyes can give fast shades, provided the proper method of fixing them to their support is selected.

And in order to find the proper methods of fixation a study of photo-chemical phenomena is essential.

How Can the Action of Light Be Explained?

The rays which strike the retina of our eye are those which are reflected by the bodies which we see. The rays we do not see are absorbed by the bodies and act upon them. Each dye is attacked by the rays which it absorbs, and reacts with light of definite wavelengths, which can easily be determined by a study of the absorption spectrum of the dye in question. The rays which fall beyond the visible range of the spectrum are no less active than the visible rays, and their absorption is to a large extent responsible for the fading of dyes.

It is a known fact that the absorption of the rays is a function of certain chemical groups or radicals in the molecule of the dye. Some radicals absorb long rays, in the red and infra-red portions of the spectrum, while others have an affinity for the short blue, violet and ultra-violet rays. The most dangerous rays are those which set up vibrations similar to those set up by the atoms in the dye molecule, thereby increasing their sensitiveness, and consequently also their tendency to disintegrate. As a matter of fact, exposure to light increases the chemical activity of a substance, and ultra-violet rays are the most active in this respect.

Since solar and lunar light has been found to be richest in ultra-violet rays in spring, shades, and even their supports, should be affected by light to a greater extent at this season than at any other; and time and again it has been observed that this is the case.

Instruments known as "actinometers" have been devised to measure the activity of light. In connection the work of Albert Scheurer and of Dosne should be consulted. The latter, especially, has obtained instructive results with Bellani's distillation actinometer as modified by Descroix, Besson and Thurnessen. The principle underlying the construction of these instruments is the measurement of the heat developed by the transformation of the light energy when it strikes a body. The number of calories liberated is not always proportional to the intermolecular work accomplished, for part of the energy may be absorbed to modify the chemical and electrical structure of the molecular and thereby make it more unstable and more easily broken down.

Increased Reactivity

How can we account for this increased reactivity of the molecules in presence of light rays?

Each dye molecule is a complex structure built up of groups of atoms. When energy is added in some form or other there is an increase in the tension between the various constituent groups. The ordinary bonds or valences used to explain the affinity of atoms for one another are not sufficient to explain these tensions, and we must admit of the presence of partial unsaturated affinities, which are normally latent and which are brought out by the action of light or other forms of energy. And it has been shown that it is precisely those compounds having unsaturated affinities, and numerous OH and NH_2 groups, easily-substituted hydrogen atoms and double bonds, all of which characterize organic coloring matters, which are most easily activated and which possess least resistance to the action of light.

I venture to state, and I am certain that I am not far from the truth, that the sensitiveness of an organic dye or of any other compound, is a function of its internal tensions or of its partial valences. The more sensitive a dye is to the action of chemical reagents, such as chlorine, the more sensitive it is to the action of light. Some dyes are more sensitive than others, showing that the various groups of atoms absorb the light selectively. A shade may be fast to blue light, for instance, and fade in red light. On exposing to sunlight a piece of paper or fabric dyed with Naphthol Yellow, the dye is fast if the light is filtered through a solution of the same dye, but it fades if no such filter is used. Similarly, a solution of Crystal Violet does not prevent the fading of yellow, and vice versa; but on the other hand a violet solution will protect a violet shade.

It has been indisputedly proved (Chevreul, 1837, Abney and Russel, 1839), and verified in recent years (Bollis, 1908; Gebhardt, 1910; P. Lazareff, 1912), that in most cases light exerts its destructive action only in the presence of moisture and oxygen. Most dyes are quite stable when in a vacuum or in the absence of the slightest trace of moisture. In dry oxygen most dyes are as fast as in a vacuum or in an inert gas, such as nitrogen. It is a well known fact that linen bleaches most quickly on a showery day when it is spread out on the moist meadow and the sun shines out. A solution of sodium alizarate is decolorized from the surface downwards, but remains unchanged when kept out of contact with oxygen.

These facts indicate that the fading of dyes is generally due to an oxidation, and it has been shown that in the presence of moisture and of oxygen there is formed a peroxide complex of the dye, which decomposes into a very unstable hydroperoxide complex, which in turn breaks down into a simpler compound having acid properties. If a drop of potassium iodide-starch solution is applied to a dye which has been exposed to sunlight, the solution turns blue owing to liberation of free iodine; but if the dye was kept in the dark it does not liberate iodine. In the first cases active oxygen is evidently present, and if we take into consideration the acid and aldehyde decomposition products (carbon dioxide is even given off in some cases), oxidation is proved.

The mechanism of the fading of colors by oxidation may be supposed to take place in several stages, as follows:

1st Stage

Formation of active oxygen by splitting up of molecular oxygen under the action of ionized water and of light, which, according to Mumm, takes place as shown by the equation:

$$\begin{matrix}[+\ -] & [+\ \ \ ] \\ [O{-}O] + [H{-}OH] \end{matrix} \rightarrow HOOOH \rightarrow \overset{+}{O}H + \overset{-}{O}OH$$

Or else, we may admit of the formation of hydrogen peroxide and of atomic oxygen, for the existence of Mumm's hydrogen trioxide is still problematical, even though it has been confirmed by Gebhardt's work, and we then have:

$$\begin{matrix}[+\ -] & [+\ \ -] \\ [O{-}O] + [H{-}OH] \end{matrix} \rightarrow O + HOOH \rightarrow \begin{matrix}[+\ -] \\ [H{+}O] \end{matrix} + \overset{-}{O}OH$$

2nd Stage

The perhydroxyl ions, OOH, and the hydroxyl ions, OH, are held by the partial valences, giving a hydroperoxide complex with the dye, as represented by:

$$X + \overset{+}{O}H + \overset{-}{O}OH \rightarrow X \begin{matrix}-OH \\ -OOH \end{matrix}$$

But there are also present hydrogen ions, which can also come into play and give a second type of hydroperoxide:

$$X + \overset{+}{H} + \overset{-}{O}OH \leftrightarrows X \begin{matrix}-H \\ -OOH \end{matrix}$$

3rd Stage

The hydroperoxide complexes easily break down into simpler compounds having phenol, aldehyde, or acid properties; and these reactions are frequently accompanied by liberation of oxygen which, under the action of light, remains in the active form and reacts with a fresh portion of the dye to convert it into the hydroperoxide complex. The progression of the reaction thus activates the production of oxygen, which is characteristic of autoxidation:

$$\begin{matrix}-OH \\ X \\ -OH \end{matrix} \leftrightarrows X{=}O \rightarrow X \begin{matrix}-OH \\ -OH \\ =O \end{matrix}$$

or

$$\begin{matrix}-OH \\ 2X \\ -OOH \end{matrix} \rightarrow 2X \begin{matrix}-OH \\ -HOOH \\ -O \end{matrix}$$

The hydroperoxides lose water and give peroxides:

$$\begin{matrix}-OOH \\ X \\ -OH \end{matrix} \rightarrow X \begin{matrix}-O \\ -O \end{matrix} \quad \text{or} \quad 2X \begin{matrix}-OOH \\ =X \\ -H \end{matrix} \begin{matrix}-O{-}O{-} \\ X \\ -H{-}H{-} \end{matrix}$$

Some of these peroxides can be very stable, or can be stabilized without appreciable change in shade.

On looking into the four stages outlined above (either by eliminating certain factors or by modifying the direction of some of the reactions, we can influence the reactions which cause a fading of the shade; and it is evident that a careful examination of the above equations should give us the complete and logical classification of all the possible ways in which the shade can be stabilized.

It should be noted that we purposely use the word "shade", and not "dye", because the free dyestuff does not behave the same when it has been fixed to a support such as paper or textile. And, as we have already seen, we must adhere to the combination:

X=(Dye+Support+Mordant).

Methods of Increasing Fastness

Each constituent of this combination has a part to play. When it comes to a question of fastness the support (i. e., the fiber) often has a considerable influence on the results, and this is especially true of the auxiliaries, or mordants, by means of which the dye is fixed. The paper colorist must therefore never lose sight of the chemical and physical nature of the stock, fillers and mordants.

It follows from what we have said so far that in order to increase the fastness of the shade we must:

(A) As far as the first stage is concerned:
1. Eliminate water and oxygen;
2. Reduce the ionization of the medium;
3. Prevent the formation of active oxygen,
   (a) By elimination of catalyzers,
   (b) By addition of anti-catalyzers.

(B) As far as the second stage is concerned:
4. Prevent the fixation of —OOH, —H, or —OH, which break down the molecule, and suppress the secondary valences of the dye, the base and the mordant.
   (a) By modifying the constitution of the coloring matter before dyeing;
   (b) By forming complexes after dyeing.

(C) As far as the third stage is concerned:
5. Stabilize the perhydroxyl-dye complexes,
   (a) By removal of water of constitution (formation of peroxide);
   (b) By formation of further complexes;
   (c) By elimination of accelerators;
   (d) By addition of stabilizers.

Points (c) and (d) are very similar to those mentioned under (3), and their distinction is subtle, and at times impossible.

(D) As far as the fourth stage is concerned:
6. Stabilize the peroxide dyes,
   (a) By formation of peroxide complexes.

If these theoretical considerations on the action of light are right, it should be possible to stabilize any given shade by proper application of one or more of the six methods outlined above.

I shall now proceed to classify under the six points mentioned above the most important observations which have been made to date relative to the improvement of fastness to light. Innumerable articles have been published on the subject, and I shall mention only the more important results, giving examples relating to the dyeing of paper in each case.

1. Elimination of Water and Oxygen

Those who are familiar with fastness tests are aware that they give different results according as the sample is exposed to the light under glass or in an open atmosphere. Of course it is impossible in practice to keep dyed paper in vacuum, out of contact with air and moisture. But we know of paraffin paper used for wrapping certain classes of goods, and in general the shades on these papers are more resistant than the shades obtained with the same dyes on ordinary papers, especially when basic dyes are used.

TECHNICAL SECTION, PAGE 256

I recently had occasion to observe that drawings made with crayons containing colored stearates were much faster to light than those obtained with the same dyestuffs, but without addition of stearin. A given lake is much faster when applied by means of an oil varnish than when applied merely with water. The fastness of a colored paper is improved by giving it a coat of an oil varnish or alcohol varnish, though of course the effect varies according to a nature of the gum or resin. On the whole, the fastness of a shade is but slightly increased by the use of water varnish, and its use is hardly to be recommended; slightly alkaline shellac and casein solutions are particularly dangerous, especially when they have not been sterilized, or when arsenic has been added, as is sometimes done. In that case, the color is rapidly destroyed.

The same thing often happens when there is a substance which is more easily oxidized than the dye itself. The latter is reduced, giving up its oxygen. This explains why the fading of the shade very often does not follow the general rule. It is possible that the mordant and the support are more readily oxidized than the color; but it does not necessarily follow that this oxidation takes place at the expense of the dye: a drying oil, for example, absorbs oxygen from the air, and thus preserves the color. Quite a number of examples could be given of substances which are more oxidizable than the dyes, and yet which protect the latter. But these substances themselves undergo changes which often are harmful to the dye and ultimately cause its decomposition.

Fats act chiefly in repelling water and forming a mechanical screen. Drying oils used for the same purpose have given good results on textiles, but there is little data as to their behavior on paper. Waterproofing with aluminium and copper soaps of fatty acids, as is sometimes carried out on textiles, has not given very remarkable results when applied to paper. The use of these soaps for improving the fastness of the shades, however, is not devoid of interest, and may be worth while investigating further, especially for certain wrapping papers. It practically amounts to super-sizing, and the improvement is due to the fatty or resin acids, which not only exert a physical protective action, but also act as mordant.

Everybody is familiar with the stabilizing effects of aluminium soaps on alizarins and on mordant colors, and also with the action of copper soaps on direct and basic dyes. They are due to a number of different causes, to which we shall have occasion to refer, amongst which must be mentioned their water-repelling properties.

Waterproofing by means of caoutchouc or of gutta-percha has not given any results.

The one process which so far has proved to be of practical value is treatment with paraffin; and I consider that it could profitably be applied to other grades than specialty wrappings, for instance, to paper yarn used in weaving table cloths, carpets, etc., which would be made waterproof at the same time as their light fastness was improved. Paraffining is improved when it is combined with an addition of stearin, copper stearate or copper palmitate; for the waterproofing can easily be combined with the treatments which we shall mention further on.

2. Reducing the Ionization of Water

The primary reaction $H_2O \leftrightarrows [H^+ + OH^-]$

$$[H^+ + OH^-] + O_2 \rightarrow HO:OOH \leftrightarrows OH^- + OOH^+$$

or

$$[H^+ + OH^-] + O_2 \rightarrow O + H:OOH \leftrightarrows H^+ + OOH^-$$

is affected by the concentration of positive hydrogen ions or of negative hydroxyl ions, that is, by the presence of acid or of alkali. Acids increase the concentration of positive hydrogen ions and correspondingly reduce the concentration of negative per-hydroxyl ions, OOH, which are formed by the dissociation of the hydrogen trioxide, or more probably by dissociation of hydrogen peroxide into H and OOH. Addition of alkalis has the opposite effect and gives a medium favorable to oxidation: and dyes are more stable in an acid medium. This is most eariy observed in dye solutions; but when the dye has been fixed on fiber it is difficult to keep it in an acid medium without attacking the fiber, except in the case of wool which gives faster shades with acid colors dyed in acid solution. With the exception of Naphthol Yellow and a few others, acid dyes are faster on wool than on paper.

Cellulose cannot withstand the action of free acid; but between that and alkalinity there is quite a margin.. We wish to draw attention to this very important point, and to insist especially on the effects of sizing. Precipitation of the rosin soap by sulphate of alumina gives a reaction which is more or less acid, or neutral, according to the relative proportions of the two; and certain conditons (excess of size) even favor the production of OOH ions and with it, oxidation. This explains the rapid fading of wall paper which has been sized with an alkaline size, or of blotting paper which was colored with direct dyes in presence of a small amount of carbonate; and it also accounts for the fact that certain alkaline pulps (straw) give rapidly fading boards when they retain traces of lime, and that wall papers fade very rapidly when applied on an alkaline bottom (freshly applied lime).

It is therefore necessary to size with a slight excess of sulphate of alumina: it may even be advantageous to add certain substances having acid properties, and some very interesting investigations might be carried out along this line.

From the discussion of this second point we should remember the effects of acid sizing and the danger of an alkaline reaction both to the fastness of the dye and to the permanence of the paper; for, along with the fading of the color, there takes place a rapid breaking down of the paper, indicated by its turning yellow when it contains groundwood. This is due to a fixation by the fiber of hydroxyl groups in presence of certain dyes, especially those which are dyed in alkaline solution (vat and sulphur dyes). Under these conditions the cellulose is attacked by light to a considerable extent. Groundwood turns brown much more rapidly when there is not enough sulphate of alumina; but the change may also be due to the presence of certain impurities which facilitate oxidation and which we shall refer to again further on.

The active agents of destruction are thus the OH and OOH ions, and absorption of the one results in the production of the other. If the dye fixes the OOH, then the OH will go elsewhere, preferably on the cellulose. It is an established fact that cellulose which has been treated with caustic soda has a greater affinity for hydroxyl ions; and it therefore results in the formation of OOH ions and consequently in the deterioration of the dye. According to the treatment to which the material is subjected before, during, or after dyeing, there is a possibility of the fibers remaining in an ionized condition, which is of the greatest importance to the fastness of the dye.

3. Rendering the Oxygen Atoms Inactive

Schönnbein, who did so much work on oxidation, was the first to note (in 1850) the special effects of light on oxygen. Since then, it has been observed that the ultra-violet rays possess this activating power to a greater extent than light of longer wavelength. Oxygen is known to be more active when acted upon by these rays in presence of certain organic substances. Ether when exposed to light in a partly filled bottle has the power to decompose a solution of indigo, and under these conditions thus has a strong oxidizing power. Its activity is really due to oxygen which has combined with it in a very labile or unstable manner. All compounds which can form such unstable oxygen compounds are activators, or oxidizing catalyzers.

A French scientist, Bidet, has shown that the fading of colors under the action of light is nearly always due to, or facilitated by, the presence of mere traces of certain substances, of which iron compounds are the most active. Traces of iron oxide are present everywhere, and their complete elimination is practically impossible. As a matter of fact, all bodies can exist as easily-oxidizable lower oxides or as easily-reducible higher oxides which readily give up oxygen thus acting as activators and facili-

tating the oxidation of the substances with which they are mixed. Scientists admit that there is a transient formation of a peroxide, and Bach states it as follows:

"Investigation of these slow oxidation phenomena has led me to the conclusion that the transformation of inert oxygen into active oxygen can take place through the formation of peroxides in the oxidation of easily oxidizable materials."

A large number of substances would thus temporarily give peroxides, for instance, aldehydes, phenols, tannin, turpentine, glucose, cellulose, etc., and also, of course, organic coloring matters and their supports.

Considering the case of aldehydes, according to Engler the reaction takes place as follows:

$$2C_6H_5{-}\overset{\displaystyle =O}{\underset{\displaystyle -H}{C}} + 2O_2 = C_6H_5{-}\overset{\displaystyle =O}{\underset{\displaystyle -O}{C}} \quad \overset{\displaystyle O=}{\underset{\displaystyle O-}{}} \quad C{-}C_6H_5$$

$$+ HOOH \leftrightarrows 2C_6H_5C\overset{\displaystyle =O}{\underset{\displaystyle -OH}{}} + O_2$$

The active oxygen is immediately absorbed by the aldehyde to give the peroxide and hydrogen peroxide, resulting in oxidation of the aldehyde to benzoic acid and regeneration of active oxygen, which is characteristic of auto-oxidation phenomena.

Haber interprets the phenomena in the following manner:

$$H_2O + O_2 = HOOH + O,$$

water playing a fundamental part in the reaction. Addition of a substance which absorbs the active oxygen increases the concentration of hydrogen peroxide, and inversely the production of active oxygen can be increased by reacting with the hydrogen peroxide as fast as it is formed. This explains why substances which decompose hydrogen peroxide act as powerful oxidizing agents and exert a particularly destructive action on shades. The effects of ferrous salts on hydrogen peroxide are well known, 1 part of ferrous salt in 2,000,000 parts of water being sufficient to activate the reaction and the production of active oxygen, which explains Bidet's statement.

We thus see that there is formation of hydrogen peroxide, and on looking at the matter a little more closely we are led to consider that this is not the primary but a secondary reaction, resulting from the decomposition of the organic hydroperoxide. This complicates matters, but for the sake of clearness I shall abide by the explanation already given, especially as what I have said as regards hydrogen peroxide practically holds for the organic hydroperoxide.

A large number of substances besides ferrous salts can favor the decomposition of hydrogen peroxide or the production of active oxygen, such as salts of cobalt, copper, magnesium, nickel and others. They are less soluble in an alkaline medium, which tends to decrease their activity, but the latter is aided by the action of the OH ions present in alkaline solutions; their greater solubility in acid solution is offset by the stabilizing action of high hydrogen ion concentrations.

Generally speaking, all oxides which can give "autozonides" with active oxygen or "peroxides" with ordinary oxygen are a menace to the permanence of organic compounds. The former react with acids to give hydrogen peroxide, while the latter react with halogen acids, setting free the halogen which reacts with organic compounds. The acceleration of catalytic oxidation by chlorine, bromine or iodine is essentially due to this decomposition; and Sisley's work on the destructive action of sunlight on silk loaded with tin containing salt, and on the methods of preventing this destruction, is a classical example of the catalytic action of chlorides. When taken as a whole, Sisley's work shows how a whole industry benefitted from very exceptional scientific and technical perseverance. It is up to us to do likewise if we wish to obtain similar benefits. The question is so complex that we should first of all familiarize ourselves with the work of Schönnbein, Engler and his pupils, Bach, Manchos, Y. Meyer, Traube, and many others.

It becomes apparent from the work of these investigators that the destruction by oxidation of organic matter, including dyestuffs and cellulose, under the action of light should be compared to a slow combustion, which finds a counter-part in the intracellular oxidation processes taking place in plants and in animals. Here we have ferments which act as catalyzers. By alternate reduction and oxidation they produce active oxygen, which then reacts with and transforms the oxidizable substances. In this slow combustion (fermentation) there is also an intermediate formation of peroxides and hydroperoxides, and in all these numerous and complex transformations the coloring matter of the plant (chlorophyll) and of the blood (hemoglobin) show a most surprising stability. They absorb and fix oxygen without being affected by it, due to the presence of protective substances known as catalases.

The most elegant solution to the problem which we are studying would be to find substances which would behave towards the dyes and their supports in the same way as catalases towards hemoglobin and Chlorophyll. These bodies would be "anti-auto-oxidizers," or stabilizers, or anti-catalyzers. A fair number of such compounds is known.

It has been known for a long time that the luminescence of phosphorus in moist air (i. e., its oxidation) is destroyed or considerably decreased by the presence of small quantities of corrosive sublimate, lead salts, copper sulphate, or phenols, that the decomposition of hydrogen peroxide by catalyzers is retarded by the presence of prussic acid, hydrosulphides, aniline, arsenic, hydroxylamine, carbon monoxide, or corrosive sublimate, and that the action of ferments is inhibited or retarded by prussic acid, fluorides, corrosive sublimate, etc. In short, all these retarders may be classified as poisons; and if the fading of a shade may be compared with decay, its stabilization is quite comparable to disinfection.

The dyer is familiar with quite a number of stabilizers, but it is not always an easy matter to classify these as anti-auto-oxidizers.

In 1903-1904 Sisley drew attention to the stabilizing action of hydroquinone and its sulfo-derivative. They protect loaded silk from oxidation. Tannin protects Sulphur Black, and particularly the cotton on which it is dyed. Sisley also discovered the stabilizing properties of hydroxylamine and of the thiocarbamides. But there are exceptions. The thiocarbamides, for instance, protect Phloxine and some of the azo dyes, but accelerate the decomposition of Rhodamine, while hydroxylamine accelerates the decomposition of Phloxine. Thiosinamine acts as an accelerator in the fading of certain dyes, while it protects others; and a process of color photography has been based on this selective action of certain accelerators or stabilizers.

It should be noted that these accelerators are not true catalyzers, but rather "inducers," as they are themselves modified in inducing the decomposition of the dye.

Among the substances which stabilize hydrogen peroxide may also be mentioned phosphoric and oxalic acids and their salts; polyphenols, such as pyrogallic acid, the para-aceto-amido-phenols; the benzoyl derivates of amino-carboxylic acids, such as benzoyl piperido-propionic acid; and especially urea from which is prepared a stable, marketable hydroperoxide. Many similar bodies, such as the acetamides, succinamides, betains, have been recommended as stabilizers, but they are not as efficient. All these substances, however, are of interest to dyers, for when they are added to the coloring matter they frequently have a beneficial effect. They do not act as catalyzers, but react directly to give stable peroxides. I shall refer to them again when we come to speak of the stabilization of hydroperoxides. The stabilizing properties of cuprous salts should also be mentioned: they are frequently considered as anti-auto-oxidizers for azo dyes, but I am inclined to consider that their action is due rather to an affinity for the double-bond of the azo group with which they form complexes, with which I shall deal in another chapter.

4. Preventing Absorption of Perhydroxyl by the Dye

This can be accomplished by first fixing atoms or groups of atoms in the dye molecules in the positions which the perhydroxyl could take.

It is a matter of removing unsaturated valences by fixing protective atoms or radicals at the weak points in the molecule. This modification is sometimes accompanied by a variation in shade. Of course, complete saturation of all the free valences would completely destroy the color, but we have a number of methods at our disposal for effecting only partial saturation. Most of these reactions, however, cannot be carried out when the dye is fixed on the fiber, nor even in presence of the paper stock, especially when it is necessary to substitute a chlorine or a sulphur atom for a hydrogen atom in an organic nucleus, or to "block" a radical which may be too unstable. These operations must be carried out on the dye itself; there is a great deal of research to be carried out along this line, and manufacturers of dyestuffs have a tremendous field before them.

When we come to examine closely the chemical constitution of the most resistant dyes, the vat dyes, we note that the auxochromes are bound together, and mutually saturate one another forming new chromophores. This result is obtained largely by condensations in ortho-positions, by formation or ring structures, and by ortho- and para-substitutions which stabilize the molecule. The manufacture of a whole group of dyes is the result of these considerations: the diazol-lumière dyes. They have a very great affinity for cellulose and exhibit a surprising resistance to light.

Use of Lakes

Another well known method of stabilizing dyes is to convert them into lakes before applying them to the fibers. The lake is generally more resistant than the solution of the dye, or than the dye itself if it is insoluble. The fastest lakes are those which are obtained by addition in ortho-position, when the mordant can take part in the formation of a new ring, which renders the combination even more stable. Pigment colors, however, are but little used for paper, and are of interest mainly for coating fancy papers.

Precipitation of the lake directly on the fiber in the case of mordant dyes, ortho-amido-sulfo and ortho-amido-carboxyl dyes, and dyes which can be fixed by means of dichromate, would be interesting and would give extremely fast shades. The problem however, has not yet been solved; but it is worthy our best attention, and the dye manufacturers will certainly evolve dyes which can be developed on the cellulose fiber, similar to those used on wool, by treating them with suitable metallic salts which combine with the amino, hydroxyl, sulfo or carboxyl groups.

We should also mention here the shades obtained by diazotizing in presence of the stock. The shades thus obtained, especially the oranges, reds and bordeaux, possess very great fastness; but in practice this process can be used only for specialties. Stabilization of the shades as obtained directly in the beater is of more general and more practical application.

Stabilizing Basic Dyes

Combining the negative (amino) radicals of basic dyes and of a few acid dyes which have basic groups, with acids having high molecular weights, so as to give insoluble complexes, affords a neat and easy solution which is quite generally applied. As is well known, complex organic and inorganic acids precipitate basic dyes and also quite a number of acid dyes which contain basic radicals in their molecules. The complex acids generally used are:

The poly-hydroxy-carboxyl-tannins and vegetable extracts, and their derivatives;
Phenol condensation products and their derivatives;
Oxidized and polymerized oils and their derivatives;
Resins and their derivatives;
Complex cyanides, such as the ferro—and ferricyanides;
Sulphur complexes (thio-derivatives);
Inorganic complexes:
- silica compounds—hydrosilicates;
- arsenic and antimony compounds;
- phosphorus compounds;
- molybdenum-tungsten compounds ("meta-acid")

Amino-metallic compounds.

These compounds have the advantage of improving the resistance to water as well as to light; but before discussing them in turn, for the sake of completeness we shall mention the action of formaldehyde on certain dyes extensively used for textiles but not in the paper industry. The same is true of diazotizing, which is of but little or no benefit as regards the fastness to light of certain shades obtained with special direct dyes.

The action of tannin and of other similar poly-hydroxylated compounds on basic dyes is too well known to require much discussion. First of all, they neutralize the action of activators by fixing them, and then their acidity, increases the hydrogen ion concentration which reduces the formation of active oxygen. On the one hand they absorb quite a large quantity of oxygen, so that hydrogen peroxide and perhydroxyl are stabilized; but in non-acid medium, on the other hand, their oxidation products act as sensitizers or activators. It is therefore necessary to reduce the reactivity of the hydroxyls by combining them with antimony salts, or, as we shall see later, with copper in the form of a sulfoleate together with urea which is added as stabilizer.

Phenol condensation products act in the same manner as tannin, but on the whole they are too expensive. The possibility of their application, however, should not be lost sight of, as one or other of these products might find an application in the coloring of some specialties.

The action of oxidized and polymerized oils on basic dyes has been known for a very long time. They do not possess a very great stabilizing power. They must be combined with metallic salts to give complex bodies in which the oil serves the very useful purpose of acting as a bridge, so to speak, between the mordants and the various sensitive groups of the color molecule.

Resins sometimes act in the same manner, and sized paper is faster to light than a similar paper that is unsized, provided the rosin soap was not too alkaline and there was a decided excess of sulphate of alumina. A general investigation of this subject is greatly needed.

Ferrocyanides, and even in certain cases sulfocyanides, are very efficient in stabilizing reactive groups used in conjunction with oils and soaps. The efficiency of these cyanides increase with their complexity. Formation of Prussian blue can easily be obtained by the used of ferricyanides; but the high price of this mordant prevents its use.

Complex inorganic acids, and particularly metaphosphoric acid, have a remarkable effect. Owing to its great affinity for basic radicals, metaphosphoric acid comes first in this respect, but unfortunately its salts are easily hydrolyzed; when used in presence of glucose it is relatively stable and gives wonderful results.

The use of complex acids derived from phosphoric, silicic and antimonic acids has been tried successfully, and also molybdic and tungstic compounds. It should be noted that the alkali salts of these acids have no effect, but that their aluminium salts are effective.

A few direct dyes have been improved by means of magnesium borocitrate.

Sulphur compounds, particularly sodium hyposulphite, stabilize some of the direct dyes by formation of additional compounds, and the organic sulphides are very interesting in this connection.

The action of *hydrated silicates* has also been known for a long time. The paper maker is familiar chiefly with the effects of fillers on the fastness of colors; but it should be noted that hydrated silicates have a decided affinity for basic dyes in general the affinity being caused by and proportional to the degree of hydration of the silicates. Of course other silicates besides those occurring naturally can be used, and some interesting investigations could be carried out along these lines.

The action of complex acids and oxides furnishes an explanation of another phenomenon, namely, the action of salts of secondary aliphatic hydroxy-acids. We know that these acids combine with metals such as iron, aluminium and chromium, forming complex salts and destroying their activating efforts on the decomposition of colors and of cellulose. But, curiously enough, these complex fatty salts stabilize the dye, just as do complex cyanides. The polyvalent metals hold the acids, enlarging their molecules, which in turn fix the amino groups of the dye. As the

resultant complex is saturated, oxygen cannot combine with it, and the shade is fast.

In certain cases the fatty hydroxy-acid can be replaced by citric, tartaric, or some other acid, by glucose, glycerine or dextrine, and in that case zinc, aluminium, iron, manganese and copper salts are the best. They are used quite regularly in textile finishing (to brighten and stabilize indigo). These principles could doubtless be applied to increase the fastness of colored coated boards.

Action of metal salts which can combine with basic radicals: copper, nickel, cobalt and zinc easily give complex amino-salts, but the manner in which they react with the amino and imino groups of dyes is quite varied. They generally affect imino-azo dyes, and they exert a particularly marked action on direct dyes.

With certain dyes, the basic ones, for example, the mere addition of a copper or of a zinc salt is not sufficient, as the oxide cannot combine directly with the dye. In that case the dye and the mordant can be held together by the addition of an amine or of a hydroxy-amine such as glycocoll. Zinc and nickel enter into this kind of combination more readily than copper. The latter alone has but little affinity for the dye, and must be combined with fatty acids. The combination of copper, ammonia and Turkey red oil has a truly remarkable action on the fastness of basic dyes, and the same is true the zinc-glycocoll in conjunction with Turkey red oil.

It is extremely important to note that the above-mentioned metals should not be allowed to come in contact with the dye when they are in the state of oxides, for under those conditions they would have the opposite effect to that desired, and would act as activators. The treatment we have just described leads to the formation of complex combinations with basic radicals.

Stabilizing Acid Dyes

The treatment of compounds having acid and hydroxyl radicals is simpler, for they can more easily give stable complex bodies. It has been known for a long time that the combination of the salts of certain metals with hydroxylated compounds, particularly with so-called mordant dyes, gives very fast products, especially when they are further combined with oxidized or sulphonated oils.

Prospects along this line are not so bright for the paper as for the textile industry. Generally, the support is first mordanted by means of a salt of aluminium, iron, chromium, or some other metal, the dye is then added and fixed by the mordant, and the material finally is sized, as is done in ordinary practice in dyeing paper. The color can also be developed on the fiber after dyeing and sizing, by printing the mordant, and in this manner bi- and multi-colored effects can be obtained.

Under this heading we must also classify the stabilization obtained by the use of two or more colors. When the two dyes neutralize each other, as happens when a basic dye is used with a substantive or with an acid dye, the chances are that the fastness will be improved. No systematic investigation of the subject has ever been carried out; and yet for those dyers who produce their shades by the combination of two or more dyes it is of tremendous importance. We may also add that acid dyes can be bound to the cellulose fiber by means of an albuminoid complex, and that they can be rendered quite fast by a subsequent treatment with formalin.

In what has preceded I intentionally have omitted to mention the fibers and the impurities they may contain, as well as rosin sizing which can come into play in many of the reactions outlined above, either assisting or preventing them. Anyone interested in the subject can easily carry out a rapid series of tests to check for himself the effects of the various factors we have mentioned; and if we recapitulate the various methods available for improving the fastness of a shade it will be realized that the work of the paper colorist is not as dull and uninteresting as it is generally made out to be. The study of these various treatments teaches us the properties of the dyes which we use, enabling us to make a more judicious choice in each case and at the same time to improve the quality of the product.

5. Stabilizing the Perhydroxyl Complexes

The OH and OOH groups which have been absorbed by the dyes can be stabilized in two ways:

(a) By making them enter into combination in a metal complex;

(b) By eliminating all substances which can facilitate their decomposition and produce active oxygen.

The second method is similar to the one treated under (3), where we looked into the methods of neutralizing the action of substances which decompose hydrogen peroxide so as to prevent production of active oxygen; for the substances which can decompose hydrogen peroxide react in the same way with the perhyroxyl-dye complexes, so that the anti-auto-oxidizers previously mentioned act as stabilizers in this case also. They are more numerous than is generally believed and they play a very important role in nature.

We have already drawn attention of the resistance of living matter—the coloring matter of the blood and of plants—and to evolution of oxygen from living green plants. These phenomena are attributed to the presence of "catalases" which form unstable complexes with the perhydroxyl ions or with the hydrogen peroxide, decomposing them into water and molecular oxygen.

Chlorophyll is a base of known composition. By adding a similar base—urea for example—to a colored solution or to a dye shade, the fastness to light is appreciably increased. Thiousea is even more efficient. We have already mentioned the stabilizing action of these compounds and of hydroxylamine on silk, which is extremely sensitive to the action of sunlight in presence of salt and traces of iron. They prevent the oxidation from proceeding. The perhydroxyl, iron and base doubtless combine to form a complex similar to catalase or chlorophyll, and this assumption is borne out by the fact that the presence of iron, manganese or other metals has been detected in most of the oxidases.

Stabilization may also be obtained by addition of a substance, such as hydroquinone or pyrogallol, which reacts with the OH and OOH groups more readily than the dye. In this connection the work of Professor Moureu and his pupils and of Professor Bigioli should be consulted.

The stabilizing action of copper salts on substantive and acid dyes is probably due to the formation of complex cuprous salts which combine with the azo, amino or imino groups.

The use of these anti-auto-oxidizers has not yet been adopted in the paper industry (except in the case of copper sulphate which is used with the substantive dyes, especially the blues). The textile chemists, however, have shown us the road to follow, and the paper colorists who wish to take it have a right to be optimistic. It is a matter of finding bodies which will do for the dyed paper what catalase does in the leaves of green plants, or in other words, we must give life and permanence to the shade. Such must be our goal.

Another way of stabilizing the perhydroxyl-dye complexes is to convert them into internal anhydrides.

6. Formation of Peroxide Dyes

It is quite possible that the dye, the support and the mordant contain hydroxyl groups which, by elimination of water, give stable internal peroxides with the perhydroxyl groups. This would explain why most dyes are more stable in a dry atmosphere. By dry oxidation, internal peroxides are easily formed without any great change in shade. This reaction takes place most easily in the case of hydroxyl, actone and carboxyl compounds, and when the dye contains quinone and anthraquinone nuclei forming part of a larger molecule.

Helindone Scarlet becomes fast to light on treating with nitrite, possibly owing to formation of the peroxide of the dye. But the improvement in the fastness of the dye is accompanied by a loss in strength of the fiber. If the support is oxidized more readily than the dye, it is the former that is attacked, and as a matter of fact vat dyes are resistant to light but facilitate the oxidation of cellulose. The support thus sets a limit to the fastness which

TECHNICAL SECTION, PAGE 260

it is desirable to obtain, for it is useless to make the shade more resistant than the material on which it is applied.

We have now answered to the best of our knowledge the three questions with which we started this article. In conclusion we should like to answer another question which will quite naturally come to the mind of paper colorists. They will almost certainly ask why dyestuffs manufacturers do not give them dyes which are sufficiently fast without requiring subsequent treatment. There are a few, but more would be required so as to avoid a multiplicity of operations and manipulations in the dyeing process. These operations may be all right for the laboratory, but not for the mill, for they increase the cost of production.

This reasoning is only partly correct. Working from the results of the photo-chemical tests of which I have just given an all too brief and incomplete outline, the research chemist will certainly succeed in modifying and stabilizing the dyes. Quite a number are already known. A mere comparison of the Lumiére-Diazol dyes with the ordinary Diazol dyes will show that some very fine work has already been accomplished. But the production of these dyes requires additional operations and manipulations, and consequently the faster dyes are more expensive. The dye manufacturer is forced to put up with what the purchaser would avoid, and we cannot prevent a faster dye from being more expensive than a similar one which is less fast. And when the consumer complains of the quality of his dyes, we can only tell him, "We have something better, but it costs more."

To turn out a good product at a lower price is the basis on which a sound and flourishing industry should be built up. In order to accomplish it, every one should advance in their particular line: the dyer by improving methods of fixation of the dyes, the manufacturer by finding new and more resistant dyes; and from their combined efforts progress will surely result.

Increasing the Combustibility of Paper*

Some manufacturers of cigarette paper which already before the war had an excellent reputation and which we cannot name, had adopted a process for making their paper more combustible than that of their competitors. It consisted in the addition to the furnish of a certain amount of oxidizing salts which, at the right time, supplied the oxygen required for the slow and steady combustion of the paper when it is not activated by the inhaling of the smoker.

This might at first sight appear to be the best, or even the only process which could be successfully employed. But a little more careful examination of the problem will soon show, first of all that it is quite expensive and then that it does not give uniform results. The salts which are suitable for the purpose, potassium chlorate and potassium nitrate, are both soluble in water, and neither of them can be precipitated on to the fibers in the form of a lake like sulphate of alumina. Owing to the dilution of the stock as it is fed on to the papermachine wire, it is evident that the sheet will retain a negligible portion of these salts, and that they will be practically completely carried away by the back waters.

Furthermore, the results obtained will not be uniform. The degree combustibility of paper made by this will vary with the concentration of potassium chlorate (or nitrate) in the water, and consequently with a given beaterful the paper made at the start will not be as combustible as that made at the last.

The very serious drawbacks which we have just discussed could both be eliminated by using insoluble, highly combustible compounds, which could be incorporated with and remain in the stock, instead of the soluble potassium salts. We would suggest adding a small proportion of a cellulose ester, which could be prepared by esterifying some of the beaten stock with nitric or chloric acid, and added just before dropping the beater.

Method of Preparing a Chloric Ester of Cellulose

Dissolve 2 kilos of uncrystallized potassium chlorate in 30 liters of very cold water in a wooden tub. Add 2.800 kilos of cotton in the form of well beaten stock, and mix thoroughly. Then stir in gradually and very slowly, so as to avoid a rise in temperature, 94 grams of 200 Baume hydrochloric acid dissolved in 1 liter of water. Allow the cellulose to stand for 24 hours in contact with the esterifying mixture. Pour the mixture on a screen, and wash the ester, which will then be ready for use.

Increasing the Combustibility of Paper

It is very important that the water in which the potassium chlorate is dissolved should be as cold as possible, as the subsequent reaction is exothermic. The cellulose ester should be kept in water as much as possible. At a temperature of about 170° to 180° C. It ignites spontaneously when dry. At first there is formed a blue, oily liquid, which is merely chloric acid, and esterification will be known to be complete when all trace of chloric acid has disappeared.

Method of Preparing a Nitric Ester of Cellulose

The di-ortri-nitrate should be used. It is the most stable nitric acid compound of cellulose and can be prepared without danger. It is the ester used in the manufacture of collodion and of celluloid.

Into 3 liters of sulphuric acid in a 20-liter enamelled vessel gradually and slowly stir 9 liters of nitric acid, of specific gravity 1.472. Cool the mixture to 15°C. and add 1.500 kilos of beaten cotton. Stir for ten minutes, drain the acid from the ester on a porcelain filter, place the cellulose nitrate in a wooden vessel, mix thoroughly with about 50 liters of cold water, and finally pour on to a screen. The ester is then ready for use.

The following precautions should be taken:

1. The acid should be cooled before adding the cotton.
2. The nitric acid should be poured onto the sulphuric acid, and not the sulphuric into the nitric acid.
3. The temperature of the mixture must be kept down to 15°C, during the reaction.

Method of Using

The quantity of nitric or chloric ester obtained by using the above-mentioned amounts of cotton and acids is sufficient for improving the burning quality of 100 kilos of paper.

The chloric and nitric esters of cellulose are very sensitive to shock. The stock should therefore be first beaten to the required degree; and when the beater is ready to be dropped the roll is raised and the cellulose ester is added, diluted in plenty of water. The stock is circulated with the roll raised for about fifteen minutes, so as to mix in the ester thoroughly, and the beater can then be dropped into the machine chest.

* Translated from *La Papeterie* xviii, 18, 21 January 10, 1926 by A. Papineau-Couture.

Frank Hodson To Handle Kaelin Boilers

Frank Hodson, consulting engineer, 1015 Chestnut street, Philadelphia, founder and formerly president of the Electric Furnace Construction Company, Philadelphia, has signed contracts with F. T. Kaelin of Montreal for the exclusive rights to Mr. Kaelin's system, process and patents on the Kaelin Electric Steam Boiler for U. S. A. and South America.

Mr. Hodson originally introduced this boiler in the U. S. A. for the Electric Furnace Construction Company, before it was taken over by the General Furnace Company.

The total number of Kaelin electric steam generators now installed is over 500,000 kw and with the growing development of hydroelectric power, their scope and usefulness is constantly increasing.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Paper Making Industry

By Clarence J. West, Chairman

Power

Steam and Power in the Paper Mill. A. B. Mallinson. World's Paper Tr. Rev. 83, 1470-1474 (May 1, 1925); Paper Mill 49, No. 21, 44, 46 (May 23, 1925). Brief discussion of its production use and misuse.—A. P.—C.

Justifiable Small Power Plants. A. B. Mallinson. World's Paper Tr. Rev. 83, 2330-2334 (Apr. 17, 1925). A discussion of the conditions under which small power plants are justified.—A. P. C.

Steam Accumulator Apparatus for Steam Plants. J. K. Ruths assignor to A/B Vaporackumulator. U. S. pat. 1,499,697, July 15. 1924. The object of the invention is to provide a single regulating valve between the boiler and accumulator connected so as to keep the pressures constant in the various piping systems (operating at different pressures.) It is actuated by the pressure of steam in the boiler and operates at a predetermined valve, and decreases the steam supply when the pressure falls below another predetermined value.—A. P. C.

Steam Accumulator Apparatus for Steam Plants. J. K. Ruths assignor to A/B Vaporackumulator. U. S. pat. 1,499,697, July 1, 1924. In steam plants provided with steam accumulators, a valve mechanism is arranged in a conduit supplying steam from the boiler to the accumulator and it operates, when the pressure in the conduit is increased above a predetermined value, to increase the steam supply through the conduit, and it acts to throttle the steam supply upon a decrease in the pressure below a predetermined value, the object of such an arrangement being to maintain in a practically constant pressure in the steam generator and the piping system. In order that power may be obtained from the drop in pressure, the invention provides that the drop in pressure due to throttling shall take place in a steam motor comprising a number of units, including a high pressure unit and a low pressure unit. The high pressure unit is supplied with steam direct from the boiler, and the low pressure unit receives its steam from the high pressure unit either directly or through an intermediate pressure unit. The steam accumulator is supplied with steam from the motor; and a valve mechanism is inserted in the connection leading steam to the low pressure unit and is actuated by the pressure in the conduit from which the high pressure unit is supplied so as to control the steam supplied to the low pressure unit. A regulator is also provided to control the steam supplied to the high pressure unit.—A. P.—C.

Best Voltage for A. C. Power Distribution in Paper Mills. G. Frogner Making Paper 7, No. 12, 355-358(June 1925); Paper Mill 49, No. 26, 4 (June 27, 1925). From an analysis of relative costs the author concludes that the 2200 and 220-volt combination is considerably more expensive even if hand starters are employed, than the 440 or 550-volt installation. On the automatic starting equipment the difference is still greater.—A. P.-C.

Recording Instruments for Paper Manufacture. T. Harvey. Paper Trade J. 80, No. 24, 62(June 11, 1925); Paper Mill 49, No. 23, 44 (June 6, 1925); Paper Ind. 7, 425 (June, 1925). A plea for devising and perfecting instruments for giving continuous automatic records of the properties of paper during the course of manufacture.—A. P.—C.

Getting the Most Out of Soot Blowers. K. Rankin. Pulp and Paper 23, 623-624 (June 4, 1925). Discussion of the paper and rational way of using soot blowers. —A. P.—C.

Boiler Feed Water Purification. Emile Huc. Papier 28, 405-409 (Apr., 1925). Brief discussion of the various methods of purification and more particularly of the merits of the continuous blow-down method. —A. P.—C.

Pulverized Coal—Unit System. W. E. Heckeroth. Paper Mill 49, No. 26, 26, 28 (June 27, 1925). Discussion of the advantages of pulverized coal in boiler furnaces and of the merits of the unit system over the storage system. —A. P.—C.

Developments in Steam Power Plant Equipment for the Modern Paper Mill. A. J. T. Taylor. Paper Ind. 7, 385,392 (June, 1925). A brief survey of some of the more important pieces of equipment that go to make a modern paper mill steam plant.—A. P.—C.

Developments in Power in the Paper Industry in the Last Decade. Paper Ind. 7, 396-393 (June, 1926).—A. P.—C.

Power Problems for the Plant Engineer. R. W. Leeper. Paper Trade J. 80, 55-57 (June 11, 1925); Paper Mill 49, No. 25, 4, 18 (June 20, 1925); No. 26, 24 (June 27, 1925). A discussion of the various factors entering into the economical generation, distribution and utilization of energy.—A. P.-C.

Use of Mond Gas From Peat in the Pulp and Paper Mill. E. Belani. Papierfabr. 23, 4081-411 (June 21, 1925). Mond gas from peat has the composition: 14 to 16% carbon dioxide, 11 to 12% carbon monoxide, 3 to 5% methane, 25 to 27% hydrogen and 41 to 46% nitrogen. The application of Mond gas for firing boilers is discussed and a plant layout is described.—J. L. P.

Inspection of the Borsig Plant in Berlin-Tegel. Anon. Papierfabr. 23, 337-341 (May 24, 1925). Description of a trip through the A. Borsig machine works. The use of high pressure steam is briefly discussed.—J. L. P.

Industrial Development of Newfoundland. A. A. Paloi and F. A. McLean. Pulps & Paper 23, 615-622 (June 4, 1925.) Detailed description of the Humber Valley hydroelectric power development which is being carried out in connection with the paper mill at Corner Brook.—A. P.—C.

Testing of Lubricating Oil. E. Belani. Papierfabr. 23, 288-290 (Apr., 26); 296-1299 (May 3); 307-1310 (May 10, 1925). German methods for testing lubricating oils, in particular for the paper industry, are briefly described. A table of specifications for oils for various purposes is appended.—J. L. P.

Selection, Setting Up and Upkeep of Precision Bearings. Papier 28, 411-418 (Apr., 1925); L'indus Papetiere 4, 172-180 (June, 1925). A general discussion, particularly of the care of ball and roller bearings in order to obtain proper results.—A. P.—C.

Use and Construction of the Ruths Accumulator. Anon. Papierfabr. 23, 433-436 (July 5, 1925). A description of the construction and application to the pulp and paper industry of the Ruths steam accumulator.—J. L. P.

Blue Coal. H. Postl. Papierfabr. 23, 449-451 (July 12, 1925). A historical description of wind motors for power purposes, including the recent Flettner design.—J. L. P.

Method of Preventing Boiler Scale. A. V. Baumann. Ger. pat. 413,443. Papierfabr 23, 476 (July 19, 1925). Waste pulp liquor is used as a means of preventing the formation of boiler scale.—J. L. P.

Rational Power Transmission. R. Kaethner. Wochbl. Papierfabr. 56, 8241826 (July 4, 1925). The use of ball and roller bearings in power transmission is described.—J. L. P.

Report of the Convention of German Engineers, Munich.

Anon. Papierfabr. 23, 471-473 (July 19, 1925). A brief report of the proceedings.—J. L. P.

Electrically Heated Pulp Digesters. Koholyt A. G. Ger. pat. 415,061. Zellstoff U. Papier 5, 267 (July, 1925). An electric heating unit for the interior of pulp digesters is described.—J. L. P.

Testing

Disk Method of Log Sampling for Moisture Test in Wood. H. O. Keay. Pulp & Paper 23, 796-797 (July 16, 1925). Results of moisture tests carried out by the disk method at various portions of a number of logs are tabulated and plotted. They indicate in a general way that the moisture content of the log about 6 in. from the end is usually fairly near the average moisture content of the whole log.—A. P.—C.

Paper Testing at the Government Materials Testing Bureau at Berlin-Dahlem. Anon. Zellstoff U. Papier 5, 210-212 (June 1925). Paper testing at the Berlin-Dahlem testing bureau is briefly described.—J. L. P.

Quantitative Determination of Cotton, Linen and Wood Fibers in Paper Pulp. W. Dickson. Analyst 50, 317-323 (July 1925); cf. C.A. 17, 3250. The differentiation, especially between linen on the one hand and cotton and wood on the other, is greatly facilitated by staining with silver nitrate solution, clearing with nitric acid, and examining microscopically with polarized light. The following technique is recommended: prepare the sample in the usual manner to the point where it is ready for staining, heat 30 min. in a boiling water bath with ammoniacal silver nitrate (10cc. of 5% silver nitrate solution to which has been added just enough 20% ammonia solution to dissolve the silver hydroxide first precipitated), filter through a small, tough filter, wash thoroughly with distilled water, add 10 cc. of alcohol and stir the pulp gently, let drain, repeat the alcohol treatment, dry in a boiling water oven, remove the pulp from the filter paper and tease out thoroughly by means of a pair of fine forceps and a small scalpel, add to 20 cc. of nitric acid (2 cc. of 1.42 sp. gr. acid diluted to 100 cc.) previously heated to 70 to 80° C., stir frequently for 5 min., filter quickly and wash thoroughly with distilled water, dilute the pulp to the same concentration as it was to begin with, and make slides. Working on known mixtures of linen and cotton, the errors found were from—2.6% to +1.4% of the quantity of constituent determined. With mixtures of cotton, linen and wood, the errors were somewhat larger, but still considerably smaller than are generally reported by the estimation method. Microphotographs taken by plain and polarized light are shown.—A. P.—C.

Standard Methods of Testing Wood Pulp for Strength. G. Hall. Paper Trade J. 81, No. 4, 45-49 (July 23, 1925). Attention is drawn to Finnish work on the standardization of a strength test for wood pulp, and the Lampen steel ball mill is described. Comparative tests by the American and Finnish beating methods show that the pebble mill beating methods are inapplicable for long time beating tests owing to disintegration of the pebbles which increases the ash content of the pulp. Two different standard methods are suggested, a "mill test" and an "official test," the former intended for mill control and study of the pulp in the mills, the latter intended for classification of the various pulps sold on the international market. The performance of these two tests is outlined in detail, and a method of air-drying handmade sheets is given in this connection.—A. P.—C.

Methods of Testing Groundwood. J. Teicher. Paper 35, 355-359 (Dec. 18, 1924). See Pulp & Paper 23, 946 (Aug. 20, 1925); Paper Trade J. 81, No. 7, 53 (Aug. 13, 1925).—A. P.—C.

New Method for Determining the Strength of Chemical Pulp. P. M. H. Jacobsen. Papier 28, 877-880 (Aug. 1925). The author shows that the tensile strength of paper can be found from that of the pulp from $r=R.y.a$, in which r is the breaking length of the paper, R is the "zero-breaking length" of the unbeaten pulp, y is the increase in R obtained by beating for the given grade of paper (to be determined experimentally under mill conditions), and a is the adhesion (ratio of ordinary to "zero" breaking length, approximately constant for a given grade under given mill conditions).—A. P.—C.

Strength Tests on Pulps. K. Reith. Papierfabr. 23, 525-529 (Aug. 16, 1925). Strength tests on pulps showed that the maximum tearing length was obtained when the stock was parchmentized. The experiments are described in detail. The chlorine figure of the pulp decreases with an increase in strength.—J. L. P.

Optical Measurement of the Whiteness of Bleached Pulps. H. Wenzl. Wochbl. Papierfabr. 56, 1122-1125 (Sept. 12, 1925). The Ostwald half-shade photometer for color measurement is described.—J. L. P.

Swelling and Absorption of Cotton and Wood Pulp Fibers. C. G. Schwalbe and G-A. Feldtmann. Papierfabr. 23, 589-595 (Sept. 13, 1925). A simple method for determining the absorption quality of a pulp is to expose strips of air dry sample, 4 by 8 cm., previously weighed, to the action of a liquid for 4 hr. at room temperature. The pulp is then drained for 120 sec. and weighed. By this method there was practically no difference in the absorption of water and of a 1% acetic acid solution by various pulps. The water absorption of bleached pulp is below that of unbleached pulp. Swelling and absorption are closely related to one another. The latter can be easily determined by ascertaining the amount of ferric oxide retained by the fibers after exposing the pulp sample to a ferric acetate solution for 1 hr. with agitation. The g. iron oxide held by 100 g. ash and moisture-free fibers is termed the iron oxide number. Determinations of water absorption and the iron oxide number are useful in interpreting the nature of wood pulps, besides the usual chemical analysis. The researches of Schwalbe and Teschner (C.A. 19, 3017 are discussed. The amounts of aluminum oxide and iron oxide retained by the fibers are proportionately the same. Unbleached Mitscherlich pulp show a greater absorption than other pulps.—J. L. P.

Testing Methods. Anon. Papierfabr. 23, 608-610 (Sept. 20, 1925). Standard German methods for testing paper are briefly described. They include resistance to crumpling and rubbing, bending strength, thickness, weight per sq m., weight by volume, ash content, groundwood test, sizing strength, aging and color fastness, resistance to fats, etc., and differentiation between genuine and substitute parchment.—J. L. P.

Mullen Tester and Schopper Apparatus. R. Sieber. Papierfabr., 23, 617-618 (Sept 27, 1925). A discussion of paper testing with the Mullen tester and the Schopper apparatus. The relationships between these tests as given by G. K. Beman are cited, the results of the Mullen tester being expressed in the metric system.—J. L. P.

Folding Number. P. M. H. Jacobsen. Papierfabr. 23, 573-574 (Sept. 6, 1925). A mathematical study of the folding endurance paper test. It is emphasized that this test is a quality test for paper.—J. L. P.

Testing Parchment Paper. Anon. Papierfabr. 23, 502 (Aug. 2, 1925). Physical tests for parchment paper are briefly discussed.—J. L. P.

Some Properties of Paper. P. M. H. Jacobsen. Papier 28, 895-900 (Aug., 1925). Breaking length (tensile strength), "zero-breaking length," fiber breaking length, adhesion, bulk, are defined. The importance of testing conditions, and more particularly of tension in determining folding resistance, is briefly discussed.—A. P. C.

Measurement of the Translucency of Paper. C. F. Sammet. PAPER TRADE J. 81, No. 5, 49 (July 30, 1925). Description of the technique of the test, using the new type of Ives tintphotometer.

Bright Stain for Bleached and Unbleached Sulphite. Paper Trade J. 81, No. 8, 48 (Aug. 20, 1925). Pipette 10 cc. each of $FeCl_3$ and $K_4Fe(CN)_6$ solutions into a small beaker, and stain the moistened slide in this for 20 min. at 20° C. Stain 20 min. at 20° C. in a 0.6% soluition of DuPont's crude benzopurpurine 4B. Treatment at 20° C. instead of 35° C. as previously recommended gives clearer results without decomposition of the $FeCl_3$ and $K_4Fe(CN)_6$ solutions.—A. P.-C.

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

Affiliated with

THE AMERICAN PAPER AND PULP ASSOCIATION

Conducted by THOS. J. BURKE, C.A., Sec-Treas

Obsolescence*

By L. L. Thwing

There is an interesting discussion in the minutes of the hearings before the Couzens Committee which has been investigating the income-tax unit. This discussion is between L. C. Mason, counsel for the committee, and A. W. Gregg, then special assistant to the secretary of the treasury. It involves the measure and spread of obsolescence. While it is reasonable to assume that the position of these men is that of a prosecuting attorney and counsel for the defense, respectively, this is not necessarily unfavorable to a thorough airing of the subject. The abstract nature of obsolescence is a topic that may be discussed without serious differences of opinion, but a statement of a specific problem involving the amount and spread of obsolescence is likely to provoke discussion. The case from which I propose to quote is no exception. After such quotations and explanations as seem pertinent it will be possible to select from this material the parts which appear to be most informative.

The case under consideration is that of a taxpayer who purchased an old blast furnace in 1912. This was operated until July, 1920, when it was shut down, abandoned and finally sold as scrap. The taxpayer's claim for obsolescence is cost, less depreciation and salvage value. Claim was made and allowed that such loss as obsolescence should be spread over the years 1918, 1919 and half of 1920. Mr. Manson does not attack the amount of the allowance, but only the spread.

Parallels Case of Great Lake Freighters

Mr. Manson says that the case is exactly parallel with the well known case of the great lakes freighters, in which it was decided by the solicitor that the obsolescence which accrued prior to January 1, 1918, might not be deducted in tax returns for 1918 and subsequent years. (Cumulative bulletin No. 5, page 148.) It was agreed by both Mr. Manson and Mr. Gregg that there has been no marked advance in blast-furnace improvement since at least as long ago as 1900. Even improvement prior to that time was rather in the increasing size of the furnaces than in any change of methods. Mr. Manson said that obsolescence is intended to cover that loss which is due to the development of the art but not to cover any loss caused by the fact that the owner, for any reason, no longer has any use for the property. "Suppose that we have need for 500 kilowatts of power. We put in a 500 kilowatt generator. Two or three years later we need more power. This 500 kilowatt generator is not obsolete, but the growth of our demand for power is such that if we abandon it and put in a larger generator we will save money. Now while that particular piece of machinery can not be said to be obsolete, it *is* obsolete from the standpoint of the taxpayer. . . . In the case of the blast furnace a 150 ton furnace was not economical for anyone under the conditions. In the case of the 500 kilowatt generator, a 500 kilowatt generator may be more economical for a certain taxpayer's use than a larger generator would be. That depends on his demands. The difference is this: If, regardless of a taxpayer's demands, a piece of equipment becomes obsolete, then this obsolescence is due to changes in the art and not to the taxpayer's situation. This is the case with reference to boats. . . . The development of shipping on the great lakes was such that the man with the 10,000 ton boat could put out of business the fellow with the 5,000 ton boat. The same is true in the production of iron. The man with the 150 ton furnace can not compete with the man who has a 500 ton furnace. . . . My point is that if there is a change made in the art which produces a facility under which more profits can be made than can be made by the use of a then existing facility, the old facility becomes obsolete." Mr. Manson then argues that as 500 ton furnaces were developed about 1895, obsolescence on 150 ton furnaces began at that time. Consequently any allowable obsolescence should be spread proportionately over the years 1895 to 1920. As 1918 was the first year in which obsolescence was officially recognized, only that part which accrued in 1918, 1919 and half of 1920 could be deducted, and that only in the year in which it accrued. This would mean a deduction of 1/25th of the net loss for 1918 and 1919 and 1/50th for 1920.

Senator King, who had just come into the room, then asked:

"Take the case of ships. . . . You might say that sailing vessels are obsolete, measured by this standard that you have been applying here?"

Mr. Manson: "Yes."

Senator King: "And yet sailing vessels serve a very useful purpose today. They are operated far more economically per ton carried, in some instances, than are other vessels . . . and yet by the standard that you have accepted, they would be obsolete."

Mr. Gregg agreed absolutely with Mr. Manson's definition of obsolescence, as illustrated by his analogy. He then stated his understanding of the question as follows: ". . . that it is a proper allowance for obsolescence if it becomes apparent at a given time that a given piece of property will, at the end of a specified period, be no longer useful to this particular taxpayer in his business, either because of the changes or the progress of the art, or because the growth or change in his business makes it useless to him." Mr. Manson would not agree with this definition.

Position Stated

It is not necessary to quote further from Mr. Gregg as he has stated his position very clearly in the above sentence. Mr. Manson's position, being indicated principally by analogy and precedent, is not as clear except in the matter of spread. If we neglect the apparent inconsistency in his major contention intro-

* From Journal of Accountancy.

duced by his statement "it is obsolete from the standpoint of the taxpayer," his position might be stated as follows:

1—That obsolescence is a general condition that affects equally all in the same industry, and that changes in the art and not specific economic conditions should be the measure of obsolescence.

2—That the spread of obsolescence is from the time an article first begins to become obsolete until its abandonment, and this apparently without regard to any changes in ownership during that period.

3—That any obsolescence which accrued prior to January 1, 1918, can not be deducted after that date.

Major Points at Issue

It is not the purpose of this article directly to support or attack the position of either of these gentlemen, but rather to discuss the points which their presentation has developed. Any differences in their opinions were discussed before the committee and may be read in the report previously cited. The major points at issue seem to be as follows:

1—Is the measure of obsolescence technical or economic?

2—Is obsolescence fundamentally general or specific?

3—How is the spread to be determined?

It will probably be granted that the original and most common thought related to obsolescence is improvement in the art. Just what is meant by improvement in the art? From a strictly technical point of view it might be any device that produces a better article or one that may be made from cheaper materials or with less labor. And this is irrespective of the cost of the device, the demand for the improved article or the condition of the labor market. An engineer or a chemist may develop a new mechanical movement or a hitherto unconsidered chemical reaction, which may be hailed by his professional brethren as a notable addition to the science or art. These may be termed strictly technical achievements of pure science, and before they can be made of any practical value to mankind they must be adapted to a specific application and use in some industry. A mechanical improvement must be applicable to some specific art and even then, unless the inventor can show a lower cost per unit, all factors of cost being considered, and unless the sales department can find a market for the improved product, this new device will not cause obsolescence to accrue in all other similar devices because of its technical superiority. Whenever a manufacturer considers the replacement of possibly obsolete machinery his interest focuses on the relative profits which may be made. Will the new machine save money in the old market or make more money in new markets? There can be no reasonable doubt that in practice the test of obsolescence is relative costs or profits. These are economic considerations.

Not All Considerations Have Equal Weight

If, however, we concede the truth of this, it does not follow that all economic considerations have equal weight in measuring obsolescence. Mr. Manson states that obsolescence does not "cover any loss due to the fact that the owner decides that he no longer has any use for the property." Mr. Gregg's definition states that a facility becomes obsolete if it is no longer useful to its owner on account of "changes in his business." It is, however, evident that if a manufacturer loses his market his machinery does not become obsolete because he can not sell his product. Gun-barrel boring machinery did not suddenly become obsolete with the close of the war of 1918. Such machinery presumably is now as efficient as any other but there is less market for its product. Nor could this situation have been improved even if better gun-boring machines had been available at the close of the war. On the other hand the equipment of certain firms producing chemicals during the war did become obsolete at its termination or shortly afterward, because Germany was able to produce these chemicals cheaper than we were at that time.

The answer to the first question is, therefore, that the ultimate measure of obsolescence is economic but it entails only that part of economics which applies to relative costs and profits. The details of the improvements in the arts may be stated in technical terms but the final word will be in dollars and cents.

If this is accepted it follows that obsolescence is specific. That is, every man's economic problems are peculiar to himself. They may not differ substantially from his neighbor's but they are likely to differ from those of a competitor in a different geographic situation. Southern cotton mills, for example, as compared with New England mills, enjoy a lower labor rate, long hours of labor and freedom from labor troubles. Where labor is relatively high, labor-saving devices are at a premium, and, conversely, where labor is cheap new machines must show a greater saving of labor to justify their acquisition. A 1900 model carding machine is therefore more obsolete in New England than it is in the south. It is evident that for a given increase in overhead due to increased investment, etc., the labor cost per unit must be cut down to a certain point before the latter will even balance the former. Labor costs must be cut still further if any improvement in costs is to be shown. It is evident that these factors are specific and peculiar to each factory. This does not mean, however, that the owner of a facility should have the last word on the obsolescence of his own machinery. Many conditions that are entirely foreign to obsolescence affect the balance-sheet. The fact that a particular plant in a prosperous industry is making no money may suggest, but it is no proof of, the existence of obsolescence.

Typical Instance of Inadequacy

The case of the 500 kilowatt generator is a typical instance of inadequacy and represents a type of obsolescence that does not depend on improvements in the art. It is my belief that inadequacy in size is the only cause of obsolescence under this heading. If a facility is not suitable, because of the nature of its production, this is not inadequacy. If the public demand for square clothespins puts round clothes-pins off the market, machines for making them are not inadequate. Neither are they obsolete. It is a case similar to that of the gun-barrel boring machines previously mentioned.

In the case of the generator, the cost of producing 1,000 kilowatts in two units is too great, compared with the cost as produced with a 1,000 kilowatt unit. If this were not so, the owner could buy another 500 kilowatt unit and the first 500 kilowatt unit would not be inadequate. It will be noted that the determining factor here is the relative cost of production and not any lack of market for the product.

The foregoing discussion is all of a qualitative nature. This is comparatively simple as compared with questions of spread which involve the point at which obsolescence begins, the rate at which it proceeds and the point at which it stops. And these must be put down in definite figures and not in pages of words. The question of the amount of obsolescence is simple, as it involves only cost, depreciation and sale or salvage value. The question of termination is also simple, as it may be assumed that obsolescence ends when the facility is discarded.

Cannot Be Discussed With Finality

On the other hand, the question of spread is a function of so many incommensurable variables that it can not be discussed with any finality. One of the most important questions is the point at which obsolescence begins. Does the conception of the idea that is later developed into an improved machine or does the issue of a patent and the demonstration of the practicability of the idea mark the beginning? Does obsolescence begin when such machines are first put on sale? None of these theories is accurate. It can not be said that these are anything more than increasingly strong suggestions that older machines *may* become obsolete. Today there are many thousands of improvements in the arts that are dormant. They may be suppressed by the owners of the patents to avoid competition with their own machinery. Even after machines are on the market, it is often a decade before they are in general use. This was the case with threshing machines. Just where does obsolescence become more than a trace or a

warning? It is when the manufacturer begins to feel the competition of superior machines. Given one hundred separate companies of nearly equal size in the same industry, the purchase and use of such machines by one of them does not diminish the profits of the other ninety-nine. It does disclose profits that they might make, but it has taken nothing away from them. They can continue to pay dividends as before. However, it may be contended with reason that obsolescence begins at this point. If these new facilities are of equal value in all plants this position is strengthened. But how can we know this? In truth, it is a safe assumption that they will not be of equal value in all plants. Experience only will demonstrate this. The single user of the new machines may know the net cash return attributable to their use but he will not publish this information for the benefit of the other ninety-nine. The greater number of constituents of the industry are in some doubt regarding the value of the new machines to them individually. It seems reasonable, therefore, to assert that even if obsolescence begins at this point, it has not seriously affected anyone, and until a majority of the ninety-nine begins to feel the competition of superior facilities, there is no serious accrual of obsolescence. It is my belief, that practically obsolescence begins when the manufacturer begins to suffer loss of profits due to competition with facilities that can produce more cheaply than his own. It begins when his net earnings are reduced by this cause. It does not begin when there is a strong possibility that he might increase them by installing new machinery.

An Example

For example, there has been on the market for some time an improved textile machine. There is no question that in certain mills it is an improvement. However, it is an expensive unit and in some mills seems to do no more than break even as compared with established methods. The only test of the universality of application of any device is experience, and this is a slow indicator. Consequently the textile industry as a whole is not feeling the competition of this machine. Perhaps it never will. Until there is such assurance it can not be definitely stated that competing machines are obsolete. If a new machine prevails until most mills have discarded their old machines, then, and then only, can we say that the old machines are obsolete. And even then there will be certain localities in which they are not obsolete.

In the case under discussion, Mr. Manson claimed that obsolescence should be spread from the date on which 150 ton blast furnaces first began to be obsolete in 1890. It is not possible within the limits of this article to discuss the phrase "first began to be obsolete" with relation to the progress of the art. It will be assumed that this is the time at which the advantages of larger furnaces were first demonstrated. It can not be denied that Mr. Manson had ample justification in precedent for this stand. However, it is presumably true that it was ten or fifteen years later than 1890 before the smaller furnaces began to feel the competition of the larger units. If we concede that obsolescence began in 1890, it certainly accumulated very slowly until some considerable part of the country's pig iron was smelted in larger furnaces.

Should Be Spread Uniformly

It was claimed that obsolescence should be spread uniformly from 1890 to 1920, notwithstanding the fact that the furnace was sold to the taxpayer in 1912. In any case involving the resale of a depreciable asset, the sale price may be presumed to reflect any loss of value due to wear and tear, obsolescence and current cost of a new facility. The purchaser was acquiring a partly obsolete asset, may be presumed to have limited the amount of his offer in accordance with the extent of this. Therefore there would seem to be no justification for a spread greater than from 1912 to 1920. Whatever obsolescence accrued from the time the furnace was built until 1912 would be written off on the books of the original owners. If it is assumed that after 1912 obsolescene was uniform over the life of the furnace, there is no reason why more than 2⅛ths of any demonstrable loss should be deducted in 1918, 1919 and 1920, as obsolence had no official status until 1918.

A Pertinent Discussion Not Possible

Any pertinent discussion of the spread of obsolescence in the instant case is impossible as full details are not to be found in the published report. We do not know the reasons advanced by the taxpayer for a spread over the years 1918, 1919 and 1920. For purposes of discussion it might be assumed that the furnace was purchased in 1912 at a low price. The year 1912 was a boom year. If, except in 1913 and 1914, the furnace averaged an earned dividend of 6 per cent each year until 1918, it is conceivable that the owner might then have realized that after the war the cost of repairs, renewals and improvements would be such that the furnace could not operate at a profit. Until that time, due to the right war-time price of pig iron, the furnace could operate at a profit even with a heavy maintenance charge. That is, by patching and piecing, the furnace could be kept under blast but it would be evident that the furnace must soon be shut down unless extensive repairs and improvements were made. If the above conditions are assumed and also my definition of the point of inception of obsolescence, the taxpayer's contention will be sustained. If the furnace operated at a normal profit until a certain time, at which it became evident that after a definite date it could not continue to do so, then obsolescence began at the time when this was realized. In this case it was at the end of the war in 1918. It is therefore, logical to declare that the furnace began to be obsolete in 1918. As it was abandoned in 1920, the spread would be from 1918 to 1920. It is believed that under the stated conditions Regulations 65 contain nothing incompatible with this. This spread would not apparently be permissible under Regulations 45 or 62.

Theories Work Best Under Ideal Conditions

It may be theoretically correct to admit that obsolescence begins when a new machine is shown to be a money saver. But if obsolescence is computed concurrently with depreciation by the straight-line method, it must be assumed that the owner's loss is the same during the first years as it is during the last. This, however, is not likely to be true. The loss at first is so slight that it can not be noticed and during the last years of use it is so great that it compels attention. The phrase "improvements in the art" has no quantitative significance. The administration of any plan, method or theory demands definite quantities. Engineering data in terms of quantities per unit of time are only a part of the story. The entire story will be found on the manufacturer's books if it can be read. It is at least conceivable that an analysis of these books would show what part of loss of earnings is due to obsolete equipment. This would be a measure of the degree or amount of obsolescence. Such an analysis would not be accurate but it could be made more nearly so each year. There is much to be said for any method that admits of refinements and improvements. The arbitrary straight-line method admits of no such improvements within itself. Simplicity is its only virtue.

"Twentieth Century Advertising"

Under the heading of "Twentieth Century Advertising," George French discusses in a delightful, entertaining way some twenty-five topics of pertinent interest to advertising men.

His book is an epitome of the great advance which the science of advertising has made since 1900. The cause and contributing factors, certain of the men who aided and guided this advance, and its results and influence on business, are treated historically and everyone interested either directly or indirectly in the profession of advertising will find in it a wealth of new ideas.

There is nothing in the text book or the technical book in this volume—rather it is an account of progress and a summing up of the facts which made this progress possible.

This volume is published by the D. Van Nostrand Company, 8 Warren Street, New York. Price $6.00.

Bookkeeping in Forest Management*

By J. Roeser, Jr., U. S. Forest Service

In the past few years, forest regulation has received quite an impetus through the construction of revised management plans on most of our National Forests. In preparing these plans, one fact has impressed me more perhaps than any one other, and that is, the character of a suitable form for recording all information necessary for the proper conduct of the regulatory system.

Up until the present time, regulation has fallen short in National Forest management because of two conditions: the failure to construct practicable working plans; and the failure to provide for a definite record of all operations affecting cutting, increment and growing stock. For the latter reason, a form of control book for recording all operations dealing with the production and removal of timber, and their costs, is necessary. This may include, of course, all other lines of activity which are conducted on the forests.

One of the Things Lacking

One of the things lacking at the present time in our accounting scheme is a record of the actual cost of growing timber on the National Forests. The interest bogey, as others have pointed out, has scared us in the past and is still scaring us, although many practical foresters are beginning to feel *that compound interest has no place in forest finance under a sustained yield management.* Private business practice, in general, including private forest business, expects to and calculates to secure returns which cover, at least, an equitable interest on the investment. In order to encourage systematic forest management on private holdings, and to provide comparable data, it seems to me that we must put ourselves more or less on the same working basis with private enterprise. I do not mean to say that we should make all other objects subsidiary to highest financial gain, but we should apply ordinary accounting methods in calculating costs and revenues in order not to create unfair competition and to put the Forest Service on a more self-sustaining footing. At the present time, our system is rather haphazard and provides no example for private ownership to follow.

The simplest form of accounting would provide a segregation of expenditures as between investment and expenses and also a segregation of these expenditures as between revenue-producing activities and non-revenue producing activities insofar as possible for each working plan unit. Such segregations as could not be made directly could later be determined by pro-rating on some equitable basis such as the amount spent directly on such activities. Most investments share in the current cost of the object of investment. This current cost is obtained by applying depreciation to the investments, or "writing them off." The current cost of such investments as improvements, timber surveys, management plans would be obtained in this way. Protection costs of timber production would be ascertained by pro-rating the annual cost for this item between the amount cut annually or periodically and the increment. If $10,000 were spent periodically for this item and the cut approximated one-fifth of the periodic yield, $8,000 would be charged to the growing stock as investment and $2,000 as the protection cost of the timber cut. By summarizing the current costs of improvements, management plans and timber surveys, and protection and current costs of making sales and administering them, we would have the total production cost of the timber cut, which may be compared with the receipts therefrom. Such a method of accounting would give the current production cost of the timber being marketed and would also show periodically the cash investment in the working plan unit. It is the information which private undertakings in forestry must establish to know their financial status periodically.

* From Journal of Forestry.

The compounding of investment or expenditures does not enter in, it being figured that the revenue from timber sales on one part of the working circle or forest will cover the interest charge on planting and other investments in another part. With the facts or near-facts apparent, it would be the problem of the management to see that investments and expenditures for a forest or the Forest Service as a whole were kept within such bounds as returns dictated. It would make for an economic and efficient development of the resource. It would go far in assisting in the proper allotment of funds where needed.

While costs and investments would be ascertained for activities that produced no revenue, such as recreation, free special uses, purely watershed protection stands, etc., the costs of such activities would not be charged against timber or other revenue producing activity receipts, but should look entirely for their support from taxation and not from any direct return from other resources that may be administered in connection with them.

Much water has passed under the bridge since the creation of the various National Forests, but the costs of administration are on record back to the origin of the forests and can be fairly well distributed to date. Past and present charges are not so great when viewed in comparison with costs as they will be under the proposed system 50 years from now. The idea is to get a start, and the sooner the better.

Valued at Actual Cost Value

Under ordinary business bookkeeping methods timber will be valued according to its actual cost value and not purely on its market value. For the time being this means a piling up of capital investment until such time as the working circle or unit is put on a sustained yield basis after which revenue will balance costs plus interest on investment. Among other advantages, such an accounting scheme should help toward personal efficiency, since forest officers will be informed of costs involved in various activities, and will be stimulated to hold these down as much as possible. Furthermore, this system will, I am sure, renew the interest of the average forester in forest finance; an interest now discouraged because the interest complex is usually more than he cares to consider.

The idea of the practicability of using a control book in forest management was impressed upon me by an article appearing in 1922 in a German periodical* by Forest-Assessor Wendroth concerning regulation under the so-called continuous form of forest management.

Continuous Forest

The continuous forest is nothing more than a selection forest in which only mature and decadent material is removed, and in which the soil is kept in a highly productive state. It is managed on the basis of growth and increment; rotation receiving no consideration. Regulation is purely by volume. In order to secure continuity of yield and a survey at all times of the growing stock and increment, a written plan has been adopted in the Forest District of Biesenthal, which to all intents, strikes me as being adaptable in many ways as a record of progress in our National Forests, where the silvicultural system ordinarily employed is the selection form.

Form Used by Wendroth

The form used by Wendroth includes a set of four pages, and the record of each unit of the working circle is kept on a separate set. Modified to suit our conditions, the general outline is as follows:—

* Wendroth. Betriebsregelung in Dauerwalde. Zeitschr. Forst. u. Jagdw. Pp. 11-22, Volume 54, 1922.

BOOKKEEPING FORM
FORM 1

Unit No. .....

Compartment or Unit Map	Forested area .....A Non-forested area .....A Total area .....A Soil condition and cover .....

Description of Stand

EXAMPLE—Southern section: Pine 37-60 years, mostly medium pole size, II (site class); 9 (density of stand on basis of 10); with occasional 50-70-year groups of advance growth and a few 140-year pine and beech veterans. Sporadic irregular clumps of spruce, 10-35 years, understory of poor growth, and occasionally 40-year oaks and beech in understory.

Western section: 5.7 acres pine, $\frac{135\text{-}155}{145}$ years, poor to medium saw logs; in the northern portion good saw logs, III, 6. Understory, especially in the northern portion, considerable reproduction of pine 10-40 years, 0.3 (approximate percentage of area occupied by young growth).

Outline Too Detailed

For general purposes, it may be argued that this outline is too detailed to apply to all units of any National Forest or other working circle. We can not, however, escape the fact that we must eventually adopt some scheme for recording the items suggested in the outline, and the above is offered as a suggestion based on a system which is working satisfactorily under European conditions.

Summary of Actual Performance

The whole value of the outline, it will be seen, depends upon the items contained on Form 3. It is the summary of the actual performance of the growing stock. The periodic increment is considered for a 5 or 10 year period, preferably the former, and is derived as a product of the original growing stock deducted from the present growing stock. This latter is to be determined either from reliable local figures established for any type and location, or from sample plots both in the uncut and cut-over forest. It stands to reason that we can not measure all of our stands, but to get away from conjecturing, some mensuration work should be done in each unit by permanent sample plot or strip survey, so that a fairly accurate figure may be obtained for the growing stock. Under the German system, stands over 20 cms. average d.b.h. are actually calipered on sample plots of .6 acres; those below this diameter limit are computed for volume from yield tables based upon density of stand and average height; 10-20 trees being measured or estimated in every stand or sample plot.

The general application of the sample plot method in this work is very desirable. During the past field season considerable work was accomplished in District 2 in securing growth measurement data by means of strip surveys and the data thus obtained could very well be applied in specific cases. For general purposes, though, the establishment in each unit of a few sample plots in stands of the chief species on representative sites, both in uncut and in stands cut-over under standard timber sale regulations, in order to get increment figures applicable to areas to be cut-over in the future, would assist greatly in buliding up our forest statistical record and would furnish the field force of the Forests an excellent opportunity, to acquire fundamental knowledge in forest mensuration and silvicultural practice.

Proper Cut Only a Matter of Time

It will be seen that by keeping this record up-to-date, the determination of the proper periodic cut for each unit is only a matter of time, since undercutting or removal of a part of the growing stock will quickly show up in the table. However, overcutting on most of the National Forests in the Rocky Mountain region, or natural working circles within them, is not likely to take place during the present rotation for one lumber demand is still limited, and the cut does not approximate the net increment. This means that a building-up of the growing stock is taking place and that a large part of our costs are going into investment. These Forests are acting as reservoirs, storing up their growing stock to meet the heavier demands of the future, and relieving the pressure on the more important timber producing regions of the South and West.

An Index of Value Increment

The German system provides also a Form 4. This is more or less subsidiary, its object being to provide an index of value increment, as contrasted with the primary volume increment control. In addition to the permanent record of each sample plot it shows the average diameters of the sample plots whenever measured; the differences indicating value fluctuations of the growing stock based on the assumption that an increase in d.b.h. with the same amount of growing stock means that there are less trees bearing the same amount of more valuable timber. By making use of current timber sale prices, this information might be augmented to show actual values and gains due to increasing stumpage. This part of the record is of no great theoretical importance, and I have not included it, but it may have considerable value in the present and future financial management of our forests.

BOOKKEEPING FORM
FORM 2

Year or Period	Merchantable Cut (Saw Logs, Ties, Fuel, Etc.) (Cu. ft. or Bd. ft.)					Revenue	Cultural Work							
	Pine	Fir	Other Conifers	Hard-Wood	Total		Labor on Soil Alone		Sowing		Planting		Thinnings and Cleanings	
							Area	Cost	Acres	Cost	Area	Cost	Area	Cost
19.....							Acres		Area		Acres		Acres	
19.....														
19.....														
Total .														

BOOKKEEPING FORM
FORM 3

Total Volume in Cubic Feet or Merchantable Timber in Board Feet

	Pine	Fir	Other Conifers	Hard-Woods	Total	Per	Investment
(Original) growing stock 19....							
Present growing stock 19....							
Periodic increment							x

x Total costs to be charged against timber during period.

COST SECTION

Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MAY 22, 1926

SUMMARY

Cigarette paper .....195 cs.
Wall paper .....261 bls.
Paper hangings .....39 bls., 8 cs.
Painted paper .....1 cs.
News print .....502 rolls
Printing paper .....156 rolls, 34 bls., 162 cs.
Wrapping paper .....22 cs.
Packing paper .....11 bls., 11 cs.
Drawing paper .....8 cs.
Writing paper .....15 cs.
Filter paper .....97 bls., 64 cs.
Crepe paper .....10 cs.
Tissue paper .....16 cs.
Fancy paper .....10 bls., 4 cs.
Surface coated paper .....251 cs.
Metal paper .....2 cs.
Photo paper .....14 cs.
Pergamyn paper .....50 cs.
Basic paper .....30 cs.
Colored paper .....4 cs.
Silk paper .....2 cs.
Paper tubes .....8 cs.
Straw board .....640 rolls
Miscellaneous paper .....53 rolls, 48 pgs., 174 cs.

CIGARETTE PAPER

Standard Products Corp., Schodack, Havre, 40 cs.

J. V. Lago, C. Villano, Alicante, 2 cs.

British American Tobacco Co., Paris, Havre, 20 cs.

P. J. Schweitzer, Pr. Harrison, Marseilles, 122 cs.

M. Spiegel & Son, La Bourdonnais, Bordeaux, 11 cs.

WALL PAPER

F. J. Emmerich, Deutschland, Hamburg, 2 bls.

Janeway & Carpender, Pennland, Antwerp, 259 bls.

PAPER HANGINGS

W. H. S. Lloyd & Co., Homeric, Southampton, 39 bls., 8 cs.

PAINTED PAPER

F. R. Arnold & Co., Suffren, Havre, 1 cs.

NEWS PRINT

Parsons & Whittemore, Inc., Deutschland, Hamburg, 348 rolls.

Parsons & Whittemore, Inc., Bremen, Bremen, 154 rolls.

PRINTING PAPER

J. P. Heffernan Paper Co., N. Amsterdam, Rotterdam, 26 bls.

Japan Paper Co., N. Amsterdam, Rotterdam, 8 cs.

International Forwarding Co., Carlier, Antwerp, 24 cs.

E. Dietzgen & Co., Inc., Deutschland, Hamburg, 7 cs.

J. P. Heffernan Paper Co., Deutschland, Hamburg, 8 bls.

Keuffel & Esser, Deutschland, Hamburg, 66 rolls.

P. C. Zuhlke, Pennland, Antwerp, 91 cs.

National City Bank, Bremen, Bremen, 89 rolls.

Martin & Bechtold, Bremen, Bremen, 6 cs.

WRAPPING PAPER

Bendix Paper Co., Deutschland, Hamburg, 2 cs.

F. C. Strype, Pennland, Antwerp, 16 cs.

H. Reeve Angel & Co., Inc., Pennland, Antwerp, 4 cs.

PACKING PAPER

J. P. Heffernan Paper Co., N. Amsterdam, Rotterdam, 11 bls.

Hensel Bruckman & Lorbacher, N. Amsterdam, Rotterdam, 11 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Homeric, Southampton, 8 cs.

WRITING PAPER

L. Bamberger & Co., Schodack, Havre, 1 cs.

F. L. Kramer & Co., Nevisian, London, 4 cs.

Japan Paper Co., Paris, Havre, 10 cs.

FILTER PAPER

Zinckeisen & Co., Deutschland, Hamburg, 2 bls.

H. Reeve Angel & Co., Inc., Homeric, Southampton, 16 cs.

A. Giese & Son, La Bourdonnais, Bordeaux, 17 bls.

J. Manheimer, La Bourdonnais, Bordeaux, 78 bls.

H. Reeve Angel & Co., Inc., La Bourdonnais, Bordeaux, 48 cs.

CREPE PAPER

L. Greenberg & Son, Deutschland, Hamburg, 10 cs.

TISSUE PAPER

M. Snedeker Corp., Andania, Hamburg, 12 cs.

Iwai & Co., May. Maru, Kobe, 4 cs.

FANCY PAPER

Whiting & Patterson Co., Homeric, Southampton, 10 bls., 4 cs.

SURFACE COATED PAPER

Gevaert Co. of America, N. Amsterdam, Rotterdam, 20 cs.

Gevaert Co. of America, Pennland, Antwerp, 111 cs.

P. C. Zuhlke, Pennland, Antwerp, 79 cs.

P. Puttman, Pennland, Antwerp, 40 cs.

Brown Bros. & Co., Deutschland, Hamburg, 1 cs.

METAL PAPER

Hensel Bruckman & Lorbacher, Deutschland, Hamburg, 2 cs.

PHOTO PAPER

G. Murphy, Homeric, Southampton, 12 cs.

Prudent Forwarding Co., Homeric, Southampton, 2 cs.

PERGAMYN PAPER

F. C. Strype, Deutschland, Hamburg, 50 cs.

BASIC PAPER

Globe Shipping Co., Pennland, Antwerp, 30 cs.

COLORED PAPER

C. W. Williams & Co., Pennland, Antwerp, 4 cs.

SILK PAPER

Brouston & Co., Paris, Havre, 2 cs.

PAPER TUBES

H. de Maguinn, Paris, Havre, 8 cs.

STRAW BOARD

A. Vuyk, N. Amsterdam, Rotterdam, 640 rolls.

MISCELLANEOUS PAPER

Heemsoth, Basse & Co., N. Amsterdam, Rotterdam, 48 pgs.

Perkins, Goodwin & Co., N. Amsterdam, Rotterdam, 53 rolls.

Perkins Goodwin & Co., Andania, Hamburg, 106 cs.

Keller Dorian Paper Co., Suffren, Havre, 19 cs.

Hudson Forwarding Co., Suffren, Havre, 2 cs.

Japan Paper Co., Suffren, Havre, 4 cs.

Japan Paper Co., Paris, Havre, 10 cs.

Keller Dorian Paper Co., Paris, Havre, 12 cs.

C. H. Boulin, Paris, Havre, 6 cs.

Guibout freres, Paris, Havre, 15 cs.

RAGS, BAGGING, ETC.

Marx Maier Papermill Supply Co., Schodack, Havre, 145 bls. bagging.

Katzenstein & Keene, Inc., Schodack, Havre, 34 bls. rags.

Castle & Overton, Inc., Schodack, Havre, 49 bls. bagging.

Brown Bros. & Co., Schodack, Havre, 87 bls. bagging.

V. Galaup, Schodack, Havre, 44 bls. rags.

Royal Manfg. Co., Schodack, Dunkirk, 49 bls. cottonwaste.

Salomon Bros. & Co., Schodack, Dunkirk, 74 bls. threads.

J. Cohen, N. Amsterdam, Rotterdam, 41 bls. bagging.

National Bank of Commerce, N. Amsterdam, Rotterdam, 32 bls. rags.

E. J. Keller Co., Inc., N. Amsterdam, Rotterdam, 42 bls. rags.

Atlas Waste Manfg. Co., N. Amsterdam, Rotterdam, 56 bls, old carpets.

Robert Blank, Edison, Constantinople, 285 bls. bagging.

Anglo South American Trust Co., Carlier, Antwerp, 56 bls. rags.

Seaboard National Bank, Carlier, Antwerp, 118 bls. bagging.

W. Schall & Co., Nevisian, London, 160 bls. rags.

E. J. Keller Co., Inc., Deutschland, Hamburg, 50 bls. rag pulp.

Whaling Waste Products Co., Deutschland, Hamburg, 161 bls. jutewaste.

Chase National Bank, Deutschland, Hamburg, 259 bls. rags.

Anglo South American Trust Co., Pennland, Antwerp, 219 bls. jutewaste.

Ohio National Bank, Pennland, Antwerp, 250 bls. flaxwaste.

Manufacturers Trust Co., Hellig Olav, Copenhagen, 400 bls. bagging.

Anglo South Amer. Trust Co., La Bourdonnais, Bordeaux, 49 bls. jute card waste.

McKenzie & Co., Utah, Dunkirk, 10 bls. rags.

American Exchange Natl. Bank, Utah, Havre, 163 bls. new cuttings.

S. Silberman & Co., Utah, Havre, 4 bls. rags.

W. Schall & Co., Utah, Havre, 37 bls. new cuttings.

Bowery East River Natl. Bank, Utah, Havre, 200 bls. rags.

State Bank, Utah, Havre, 19 bls. rags.

National Bank of Commerce, C. Villano, Marseilles, 316 bls. rags.

A. W. Fenton, Inc., C. Villano, Marseilles, 31 bls. bagging.

E. Butterworth & Co., Inc., C. Villano, Leghorn, 71 bls. rags.

National City Bank, C. Villano, Leghorn, 154 bls. bagging.

Irving Bank Columbia Trust Co., Arsa, Venice, 29 bls. rags.

Royal Manfg. Co., Arsa, Genoa, 60 bls. bagging.

Atterbury & McKelvey, Arsa, Naples, 245 bls. rags.

A. W. Fenton, Inc., Arsa, Leghorn, 153 bls. rags.

Mechanics & Metals Natl. Bank, Arsa, Leghorn, 113 bls. rags.

A. W. Fenton, Inc., Bremen, Bremen, 100 bls. rags.

Philadelphia Natl. Bank, Bremen, Bremen, 23 bls. rags.

State Bank, Hog Island, Oran, 557, bls. rags.

OLD ROPE

Montell & McDonough, Munamar, Nassau, 8 bls.

M. Maier Papermill Supply Co., N. Amsterdam, Rotterdam, 23 coils.

Brown Bros. & Co., N. Amsterdam, 48 coils.

Brown Bros. & Co., Nevisian, London, 242 coils.

Brown Bros. & Co., Utah, Havre, 54 coils.

Brown Bros. & Co., C. Villano, Malaga, 249 coils.

Brown Bros. & Co., Idaho, Hull, 179 coils.

Brown Bros. & Co., Idaho, Newcastle, 219 coils.

New York Trust Co., Idaho, Newcastle, 114 coils.

Union Trust Co., Idaho, Newcastle, 58 coils.

MANILA ROPE

New York Cordage Co., Carlier, Antwerp, 42 coils.

SUNN ROPE

New York Trust Co., Carlier, Antwerp, 74 coils.

De Grauw Aymer & Co., Pennland, Antwerp, 55 coils.

MANILA HEMP ROPE

Belknap Hardware & Manfg. Co., Pr. Harrison, Manila, 491 coils.

Peck & Mack, Pr. Harrison, Manila, 529 coils.

WOOD PULP

Tidewater Papermills Co., Bornholm, Liverpool, N. S., quantity pulp 1,000 tons.

Castle & Overton, Inc., Pennland, Antwerp, 1,882 bls. wood pulp.

The Borregaard Co., Inc., Tyrifjord, Sarpsborg, 2,400 bls. sulphate pulp, 406 tons.

J. Anderson & Co., Tyrifjord, Hafslund, 2,394 bls. sulphite pulp, 405 tons.

(Continued on page 70)

JAMES W. SEWALL
Consulting Forester
OLD TOWN MAINE
Largest Cruising House in America

FREDERICK L. SMITH
21 EAST 40TH STREET, NEW YORK
PULP AND PAPER MILL ENGINEER

Don't Guess at Important Matters
BOWSHER'S SPEED or MOTION INDICATOR is indispensable
in obtaining a UNIFORM speed of machinery, and is one of the most PROFITABLE little devices ever put in a mill. Will pay for itself in 30 days. Dial 12 in. in diameter. Weight, 10 lbs.
The N. P. BOWSHER CO., South Bend, Ind.

VITALE & ROTHERY
FOREST ENGINEERS
527 Fifth Avenue New York, N. Y.

B. M. BAXTER & CO.
Engineering Service for Paper Mills
PULP PAPER BOXBOARD POWER
GRAND RAPIDS, MICH. 400 Lindquist Bldg.
CLEVELAND, O. 5716 Euclid Ave.

STEBBINS ENGINEERING & MFG. CO.
Watertown, New York
Digester, Acid Proof and other Guaranteed Linings
Chemical Pulp Mill Engineers

MUIRHEAD and MANSFIELD
501 Fifth Avenue New York City
Board Mill Production Service
Standardized Furnishes and Costs
Production Quality Economy Problems
A New Service based on twenty-five years' Practical Experience

KARL A. LEFREN
CONSULTING ENGINEER
171 Madison Ave., New York City

JAMES L. CAREY
Paper Mill Architect and Engineer
208 North Laramie Avenue, Chicago
Cable Address: JASCAR, Chicago
Codes: ABC 5th Western Union

C. C. HOCKLEY
Consulting Engineer
Industrial Reports
Paper & Pulp Mills
Power Plants
Appraisals
Room 1237, Northwest Bank Bldg.
PORTLAND, OREGON

UNITED STATES TESTING COMPANY, Inc.
316 Hudson Street, New York City
PAPER: Microscopical, physical and chemical tests. Complete laboratories. Constant standard conditions.
WOODPULP: Sampling, weighing, and moisture determinations by own staff at New York and Philadelphia. Special arrangements for other ports.
Approved chemists to American Paper and Pulp Association and American Association of Woodpulp Importers.

Penn Paper and Stock Company
PACKERS OF ALL GRADES OF
WASTE PAPER
240 N. FRONT STREET PHILADELPHIA

HAYTON PUMP and BLOWER CO.
APPLETON, WIS.
Centrifugal and Triplex Pumps
FOR ALL PURPOSES
Designing Pumps to Fit All Conditions Our Specialty

STANDARD PAPER CO.
BOX BOARDS
AND BRISTOLS
KALAMAZOO :: MICHIGAN

D. MANSON SUTHERLAND, Jr.
Consulting Chemical Engineer
Broad Street Bank Building Trenton, N. J.
SPECIAL FIBRE PRODUCTS AND PROCESSES
HOMOGENEOUS BOARDS,
WATERPROOFING COMPOSITIONS
FORMING AND DRYING MACHINES
UTILIZATION OF WASTE FIBRES
PURIFICATION OF EFFLUENTS

A. J. BRADLEY MFG. COMPANY
Oiled Stencil Board
Lamp Shade Parchment
IN A VARIETY OF GRADES AND COLORS
101 BEEKMAN STREET NEW YORK

Imports of Paper and Paper Stock

(*Continued from page 68*)

Buck Kiaer & Co., Inc., Tyrifjord, Oslo, 275 bls. sulphite pulp, 55 tons.

Buck Kiaer & Co., Inc., Hellig Olav, Oslo, 400 bls. sulphite pulp.

H. Hollesen, Inc., Bremen, Bremen, 135 bls. sulphite pulp, 27 tons.

H. Hollesen, Inc., Stuttgart, Bremen, 520 bls. sulphite pulp, 104 tons.

Bulkley Dunton & Co., Stuttgart, Bremen, 1,710 bls. woodpulp.

Buck Kiaer & Co., Inc., Bergensfjord, Oslo, 800 bls. kraft pulp.

Buck Kiaer & Co., Inc., Bergensfjord, Hommelvik, 3,390 bls. sulphite pulp.

WOOD FLOUR

A. Kramer & Co., N. Amsterdam, Rotterdam, 400 bags.

B. L. Soberski, N. Amsterdam, Rotterdam, 1,000 bags.

B. L. Soberski, Tyrifjord, Frederickstad, 975 bags, 66,330 kilos.

American Exchange Natl. Bank, Tyrifjord, Flekkefjord, 989 bags, 49,750 kilos.

CASEIN

T. M. Duche & Sons, La Bourdonnais, Bordeaux, 468 bags.

J. E Bernard & Co., La Bourdonnais, Bordeaux, 27 bags.

BOSTON IMPORTS

WEEK ENDING MAY 22, 1926

McLaurin Jones & Co., Nevisian, London, 36 rolls printing paper.

Crocker Burbank Co., Nevisian, London, 414 bls. wastepaper.

F. Leyland & Co., Nevisian, London, 348 bls. rope.

Castle & Overton, Inc., Nevisian, London, 76 bls. waste paper.

BALTIMORE IMPORTS

WEEK ENDING MAY 22, 1926

Bulkley Dunton & Co., Yorck, Bremen, 416 bls. woodpulp.

H. Hollesen, Inc., Yorck, Bremen, 135 bls. sulphite pulp, 27 tons.

Baltimore Trust Co., Utah, Havre, 267 bls. rags.

National City Bank, Utah, Havre, 675 bls. rags.

National Bank of Commerce, Utah, Havre, 773 bls. rags.

Brown Bros. & Co., Utah, Dunkirk, 90 bls. rags.

Castle & Overton, Inc., ——, Antwerp, 741 bls. woodpulp.

PORTLAND IMPORTS

WEEK ENDING MAY 22, 1926

H. Hollesen, Inc., Seattle Spirit, Hamburg, 515 bls. woodpulp, 103 tons.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 22, 1926

Robert Blank, Thames Maru, Hamburg, 106 bls. rags.

Robert Blank, Nitonian, Rotterdam, 389 bls. rags.

Robert Blank, Manchester Merchant, Glasgow, 98 bls. rags.

Castle & Overton, Inc., Nitonian, Antwerp, 1,927 bls. woodpulp.

Castle & Overton, Inc., Ala, Rotterdam, 180 bls. woodpulp, 28 tons.

Castle & Overton, Inc., Westpool, Germany, 284 bls. rags.

Castle & Overton, Inc., London Exchange, London, 47 bls. rags.

F. Weber & Co., Yorck, Bremen, 1 case drawing paper.

Bulkley Dunton & Co., Yorck, Bremen, 795 bls. woodpulp.

H. Hollesen, Inc., Yorck, Bremen, 530 bls. sulphite pulp, 106 tons.

Union Paper Makers Get Increased Wages

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., May 24, 1926.—William R. Smith, president of the International Brotherhood of Papermakers, with headquarters in this city, in discussing the work of the past month estimated that the new wage agreements negotiated with paper concerns in this country and Canada would increase the pay of the members of the union by fully $500,000 for the coming twelve months. One company alone in signing agreements with the union will increase the wages of its union employees by $15,000 a year.

One of the last mills to sign with the union was the Unity Paper Company, of Potsdam. President Smith conducted these negotiations personally and it is understood that the agreement calls for substantial wage increases for certain classes of workers. The Unity Company turns out a large amount of water-marked union label paper, the sale and the price of which is now practically controlled by the Brotherhood itself. The union is planning an agressive selling campaign to bring about a more general use of this paper by trade unions and their publications.

President Smith and officials of the Brotherhood are now engaged in an organization campaign which will extend to all paper making centers in this country and Canada. As a move in this campaign the local union in Holyoke, Mass., is planning to engage a business agent who will devote his entire time to union affairs in and around Holyoke. This plan is said to be favored by the International officers.

Kaelin Boiler Installations in Canada

F. T. Kaelin, consulting engineer and advisor to the Shawinigan Water and Power Company, who for reasons of health has recently left this country for a six months vacation in Switzerland, reports that although business for his electric steam boilers in U. S. A. has dropped off in the last two years, the demand in Canada has increased rapidly and there are now over 400,000 KW. of the Kaelin type electric boiler operating in that country. One of the recent notable installations was that of a 20,000 KW. electric steam generator for the Abitibi Power and Paper Company, designed for a working pressure of 200 lbs. per square inch and with a normal capacity of 60,000 lbs. of steam per hour.

The exclusive rights and patents of the Kaelin system for U. S. A. and South America, which for the past two years have been in the hands of the General Furnace Company, have been re-transferred to Frank Hodson, consulting engineer, 1015 Chestnut street, Philadelphia.

Mr. Hodson was responsible for the introduction of the Kaelin Boiler in the U. S. A. prior to its being handled by the General Furnace Company, and believes there is still a very large field here for this special appliance.

Col. Franklin to Address Cost Men

The Executive Committee of the Connecticut Valley Division of the Cost Association of the Paper Industry, has arranged to hold a meeting at the Woronoco Inn, Woronoco, Mass., on Friday, May 28. The principal speaker will be Col. B. A. Franklin, who always has an interesting message, and it is hoped that a large number will be in attendance, at this last meeting of the season.

The meeting will also be attended by Thomas J. Burke, secretary-treasurer of the Cost Association of the Paper Industry.

The following are members of the Executive Committee of this Division:—

R. M. Mudgett, Strathmore Paper Company; M. F. Peterson, U. S. Envelope Company; A. Beston, Holyoke Card and Paper Company; J. H. Karges, C. H. Dexter & Sons, Inc.; E. E. Wolcott, Crane & Co., Inc. and J. E. Barrett, American Writing Paper Company.

These gentlemen are to be highly complimented on the successful series of meetings held in this Division, during the past season.

Dinner will be served at 6:30 P. M., and all those wishing to attend, will please forward reservations to J. E. Barrett, American Writing Paper Company, Holyoke, Mass., as soon as possible.

Pulp Output of German Mills Increases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 19, 1926.—The output of both chemical and mechanical pulp by German mills during February exceeded the preceeding month of February of last year, say reports received by the Paper Division of the Department of Commerce.

Paper production was on a level with the preceding month, the news print output reaching 35,073 tons and other paper 87,041 tons. News print production was slightly above the output during February, 1925 but other classes of paper registered a loss of 12 per cent. A smaller percentage of the news print production was exported during February, shipments representing only 22 per cent of the month's production in comparison with 27 per cent during January.

A Remarkable Range of Grades, Textures and Weights

Orr Endless Felts can now be obtained up to 86 feet in length.

With our enlarged new equipment we can now furnish Paper Manufacturers with endless felts up to 86 feet in length.

Paper Manufacturers who carefully check manufacturing costs, and also strive to produce more and better paper at a lower cost per ton prefer the unvarying quality and long service of ORR felts. A trial of them will bring about a preference of them that will be lasting.

THE ORR FELT & BLANKET COMPANY, Piqua, Ohio

TEXAS GULF SULPHUR

99½ Per Cent Pure

Huge reserves, ample stocks of remarkably pure material and unexcelled service.

Texas Gulf Sulphur Company

General Offices

41 East 42nd Street, New York, N.Y.

Sulphur Deposit and Plant, Gulf, Matagorda County, Texas

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED and MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope and Music Paper, High Grade Coated Book and Label Papers

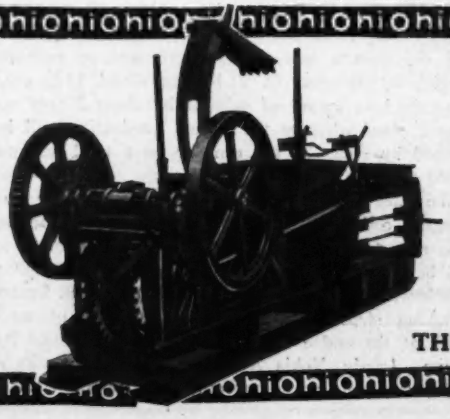
also

Bleached Spruce Sulphite and Soda Pulp

200 Fifth Avenue, New York — 732 Sherman Street, Chicago

503 Market St., San Francisco, Cal.

122 East 7th St., Los Angeles, Cal.



FAMOUS **Ohio** BALING PRESS

It compresses the waste into tighter, smaller, less bulky bales. They are more easily handled and require less storage space.

The Famous Ohio means saving of time, low labor costs, clean plant and low fire insurance rate.

THE OHIO CULTIVATOR CO., BELLEVUE, O.

New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, May 26, 1926.

Although trading in the local paper market has quieted down somewhat, the prevailing demand for the various grades is considered satisfactory for this season of the year. Prices are generally holding very steady and there are a fair number of inquiries in the market for future business. Excellent reports continue to be received from the sales forces of the leading paper houses, and there are no signs so far of any decided slump in business.

Conditions in the news print industry are very sound and the increased consumption experienced this year is being absorbed in a satisfactory manner. According to figures compiled by the *New York Evening Post* there were 131,974,000 agate lines of advertising in the newspapers of 23 principal cities of the United States during March, 1926, compared with 123,993,000 lines during March, 1925, an increase of 6 per cent, and 121,576,000 lines in March, 1924, an increase of 8 per cent. There was an increase of 7 per cent during the first three months of 1926 over 1925 and 7 per cent over 1924.

New York city newspapers carried about 10 per cent more advertising in the first four months of 1926 than in the first four months of 1925 and 10 per cent more than in the same period of 1924. There was 10 per cent more pages of advertising and reading matter in these papers in the first four months of 1926 than in the corresponding months of 1925. The corresponding advertising in national monthly and weekly periodicals for the first four months of 1926 amounted to 8,914,000 agate lines, compared with 8,177,000 lines in the first four months of 1925, a gain of 9 per cent. and 9,813,000 lines in the first four months of 1920, a loss of 9 per cent.

There are some signs of improvement in the paper board market and prices are a little steadier. The fine paper market is exhibiting a steady tone and quotations are being well maintained. The coarse paper market is still in a strong position, and wrapping paper, bags and fancy paper are in good request. Prices are practically unchanged from the recently quoted levels.

Mechanical Pulp

During the past week, the demand for ground wood pulp was rather light. Due to more favorable weather, production is increasing, and supplies will probably be more plentiful in the near future. Shipments against contract are reported to be moving at a satisfactory pace, and the future outlook of the industry is considered to be bright. Imported ground wood, No. 1, moist, is quoted at from $36 to $38 a ton, ex dock, and dry at from $37 to $40 a ton.

Chemical Pulp

No radical changes were reported in the chemical pulp market during the past week. Navigation in the Baltic is still hampered by the packing of the ice, but shipments will probably be moving freely ere long. While the current demand is rather limited, prices are holding up very well, and both imported and domestic pulp manufacturers are well sold ahead.

Old Rope and Bagging

Domestic old rope is in good request. Offerings are gradually being absorbed, and prices are firm in most instances. The foreign rope market is still depressed. The tone of the bagging market is easier. New burlap cuttings are in fair demand, but roofing bagging is rather quiet at present. Scrap bagging is said to be moving in good volume.

Rags

A better feeling is developing in the foreign rag market and prices are much steadier. The better grades of domestic rags are in fair demand, although most of the transactions reported were for small orders. Mixed rags are slightly more active and prices are fairly steady. Some dealers anticipate a better buying movement before long.

Waste Paper

There have been very few new developments in the waste paper market. The board mills are reported to be operating at a satisfactory capacity and although most of the manufacturers appear to be purchasing for immediate requirements only, a better demand should develop shortly. The higher grades of waste paper are in slightly improved request and prices are steadier.

Twine

Some slight improvement has been reported in the twine market although most of the trading during the past week was along routine lines. However, should the wrapping paper demand continue to increase for any considerable time, the twine market is bound to benefit. Prices are still considered to be too low and dealers are looking for an improvement in the near future.

Expansion in Finnish Pulp Industry

HELSINGFORS, May 16, 1926.—Your correspondent is able, on the best authority, to confirm recent rumors as to contemplated important enlargements of some Finnish cellulose and pulp mills as well as the building of a number of new mills. When completed these new extensions will perceptibly increase the production of cellulose and pulp, especially for export purposes.

Three new sulphite cellulose mills will in the near future be erected in various parts of Finland. The largest will be that built by Hackman & Co., with an estimated annual output of 20,000 tons. Raf. Haarla of Tammerfors, will shortly build a mill with a capacity of some 12,000 tons, while Laskela Bruk, Ltd., has decided to erect a mill yielding 8,000 tons per annum.

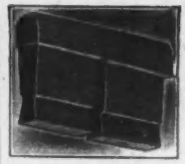
A number of existing cellulose mills will shortly extend their plants in order to increase production. The Kemi, Ltd., will increase the present output of sulphite from 30,000 to 38,000 tons and construct a new sulphate mill with an estimated output of roughly 20,000 tons. O. Y. Rauma Wood, Ltd., which some time ago raised its output of sulphite by about 25 per cent, will build a new plant whereby the annual production will be further increased by some 25 per cent or to a total amount of roughly 32,000 tons.

The Elektrometallurgiska A. B. has recently formed a new company, called the A. B. Vuoksenniska O. Y., the object of which is to manufacture mechanical pulp. The estimated annual output will be 7,000 tons (dry weight) to start with, but the intention is to increase it gradually to 12,000 tons. A. B. Svarta Bruk O. Y. is taking steps to increase the production of mechanical pulp which at the end of this year will rise to about 8,000 tons per annum. Lastly, Nokia Aktiebolag is extending its cellulose mill in order to yield an annual output of roughly 8,000 tons.

PAPER TESTS
In Accordance with T. A. P. P. I. Standard Methods
Oils — Paper — Water — Microphotograph
Electrical, Mechanical, Physical, Chemical and Photometric Tests
ELECTRICAL TESTING LABORATORIES
80th St. & East End Ave., New York

FELTS
H. WATERBURY & SONS CO.
ORISKANY, N. Y.

ATTERBURY BROS.
(INCORPORATED)
WOOD PULP, RAGS AND PAPER STOCK, FRENCH CASEINE
145 NASSAU STREET (Potter Bldg.) NEW YORK



WIECKERT COGS
Made of Hard Maple
WILL STAND THE STRAIN THEY WEAR LONGER
WIECKERT LUMBER CO.
Cogs of All Kinds
NEENAH, WISCONSIN

Established 1895
DANIEL M. HICKS
(INCORPORATED)
PAPER MILL SUPPLIES
200 FIFTH AVENUE, NEW YORK CITY

THE GEORGE M. GRAVES CO., Inc.
Domestic and Foreign

WASTE PAPER	NEW CUTTINGS	HEMP ROPE
OLD RAGS	MANILA ROPE	FLAX WASTE
WOOD PULP	BAGGING	COTTON WASTE

77 SUMMER STREET BOSTON, MASS

COMBUSTION ENGINEERING
PULVERIZED FUEL
CORPORATION
45 BROAD STREET, NEW YORK

The Guide to the Pulp and Paper Industry

A NEW edition of the Lockwood Directory of the paper and allied trades is ready for delivery. It is the 1926—51st annual edition—is thoroughly revised and brought up to date.

The entire contents is classified under separate headings for the United States and Canada, alphabetically and geographically arranged by States. The price is $7.00 cash if sent with the order which includes all delivery charges.

Published by

Lockwood Trade Journal Company, Inc.
10 East 39th Street NEW YORK

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, May 26, 1926.

Conditions in the local market are fairly satisfactory considering the period of the year. While the prevailing demand for paper makers' chemicals is rather light at present, the volume of inquiries being received by the manufacturers is said to be very encouraging. Contract deliveries are moving at a good pace and prices are generally being well-maintained.

BLANC FIXE.—Very few changes have transpired in the blanc fixe market. Offerings for prompt shipment are limited and prices continue very firm. Shipments on contract are moving in a normal manner. The pulp is selling at $56 per ton, in bulk, and the powder at from 4 to 4½ cents a pound, at works.

BLEACHING POWDER.—The position of the bleaching powder market is quite sound. Supplies are reported to be moving steadily into consumption. Bleaching powder is still quoted at from $2 to $2.40 per 100 pounds, in large drums, at works, according to quantity.

CAUSTIC SODA.—Trading in the caustic soda market was fairly active during the past week. Shipments on contract are being well maintained. A moderate volume of business was transacted in the spot market and prices remain steady to firm. Quotations on caustic soda range from $3.10 to $3.15 per 100 pounds, in large drums, at works. Spot car lots are selling at from $3.20 to $3.25 per 100 pounds.

CASEIN.—Demand for casein has quietened down somewhat and buyers are believed to be holding off in the expectation of an easier market in the near future. Stocks continue limited and spot offerings are very scarce. Imported casein is still selling at 18½ cents a pound, in bags, while domestic casein is quoted at from 17½ to 18½ cents a pound.

CHINA CLAY.—Routine business comprised the bulk of the transactions reported during the week in the china clay market. Shipments against contract are proceeding in excellent volume. The spot market is rather quiet at present. Imported china clay is still selling at from $13 to $22 a ton, in bulk, ship side. Domestic washed clay is selling at from $8 to $9 a ton, at mine, and pulverized at $10 a ton.

CHLORINE.—The chlorine market continues to exhibit strength. Consumption is reported to be heavy and production is proceeding at a normal rate. Accumulations are light. The quotation on chlorine is still 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders. The spot quotation is from 4½ to 4¾ cents a pound.

ROSIN.—Prices are again fluctuating in the rosin market. Consumers are reported to be rather cautious about anticipating their requirements very far ahead while the market is so unstable. At the naval stores, the grades of rosin used in the paper mills are now being offered at from $11.40 to $11.85 per 280 pounds, ship side, in barrels.

SALT CAKE.—The demand for salt cake is persistent, and a good volume of inquiries are being received by the manufacturers for future business. Supplies are reported to be very limited at present and prices are firm. Salt cake is quoted at from $17 to $20 a ton, in bulk, at works.

SODA ASH.—Steadiness continues to prevail in the soda ash market. Contract withdrawals are proceeding in excellent volume. Prices are holding up very well. The spot market continues moderately active. Contract quotations, in car lots, at works, per 100 pounds, range as follows: in bulk, $1.25; in bags, $1.38; and in barrels, $1.63.

STARCH.—The starch market is in a sound position and prices are firmly held at the recently quoted levels. An excellent demand is being experienced for this product at the present time. Special paper makers' starch is quoted at $3.32 per 100 pounds, in bags, and at $3.40 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—New business was rather scarce in the sulphate of alumina market last week. Stocks on hand are rather limited, however, and the tone of the market remains firm. Contract withdrawals are reported to be moving regularly. Sulphate of alumina is quoted at from $2 to $2.05 per 100 pounds, for the iron free, in bags, at works, and at from $1.40 to $1.45 for the commercial grades.

SULPHUR.—Demand for sulphur during the past week was mostly along routine lines. Contract withdrawals are reported to be moving in excellent volume and consumption is being well maintained. Prices remain very firm and there have been no rumors of concessions. Sulphur is quoted at from $18 to $19 a ton, in bulk, at mine, and at from $21 to $23 a ton, ship side.

TALC.—The talc market remains practically unchanged. A normal demand is being experienced by the manufacturers and prices continue to hold up well to formerly quoted levels. American talc is quoted at from $15 to $18 a ton, at mine, and French talc at from $18 to $22 a ton, ship side.

TORONTO PAPER TRADE EXPANDS

(*Continued from page 30*)

Cellulose Company, Cornwall, Ont., which will cost $100,000. The Belmont Construction Company, of Montreal, have been awarded the contract for building the mill.

Three car loads of pulp were burned in a blaze which broke out in the storage sheds of the Provincial Paper Mills on the Credit River at Georgetown, Ont., recently. The loss is about $10,000, which is covered by insurance.

Mrs. Kate Bowerman, of Dorion, Ont., who is one of Ontario's women pulpwood contractors, reports that she did not take out much wood last season as there was very little money in cutting. Mrs. Bowerman says that if prices go up she will cut considerable pulpwood during the coming season.

The Fred W. Halls Paper Company, Toronto, have issued an attractive book of book papers featuring 126 samples of m f and s c book and text papers. The cover is in Parkdale scarlet embossed with the crest of the firm. The book is nicely arranged and conveniently indexed.

Production of Paper in Japan Increases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 26, 1926.—Japanese Manufacturers' Association reports a total output of 79,652,178 pounds of paper by mills of the association during the month of January, an increase of 10,771,209 pounds over the corresponding month in 1925. Nearly half of the output consisted of news print paper, with other classes of printing paper comprising an additional 27 per cent. The remainder of the production consisted largely of "tori no ko moyo" paper, which competes, especially in China, with foreign vegetable parchments, wrapping and colored papers, and "hanshi" paper. The mills also report a consumption of 18,803 short tons of chemical pulp and 20,674 tons of mechanical pulp during January, increase of 1,003 and 3,693 tons, respectively, over the same month in 1925. Paper sales by mills of the association during January totalled 76,982,235 pounds.

Finnish Pulp Production Increases

WASHINGTON, D. C., May 5, 1926.—The mills of the Finnish metric tons (metric ton = 2,205 pounds) of sulphite pulp and Chemical Pulp Association, which controls over 90 per cent of 64,324 tons of sulphate pulp during 1925. Finnish production the country's output, report an aggregate production of 302,790 during 1926 is expected to show an increase of 10 per cent. Several extensions and construction of new mills are under way and others are planned for 1927. A marked tendency has been noticeable since 1920 to increase chemical pulp production, a trend which has been accentuated by the relatively poor conditions in the lumber markets supplied by Finland.